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MOTOR BOATING

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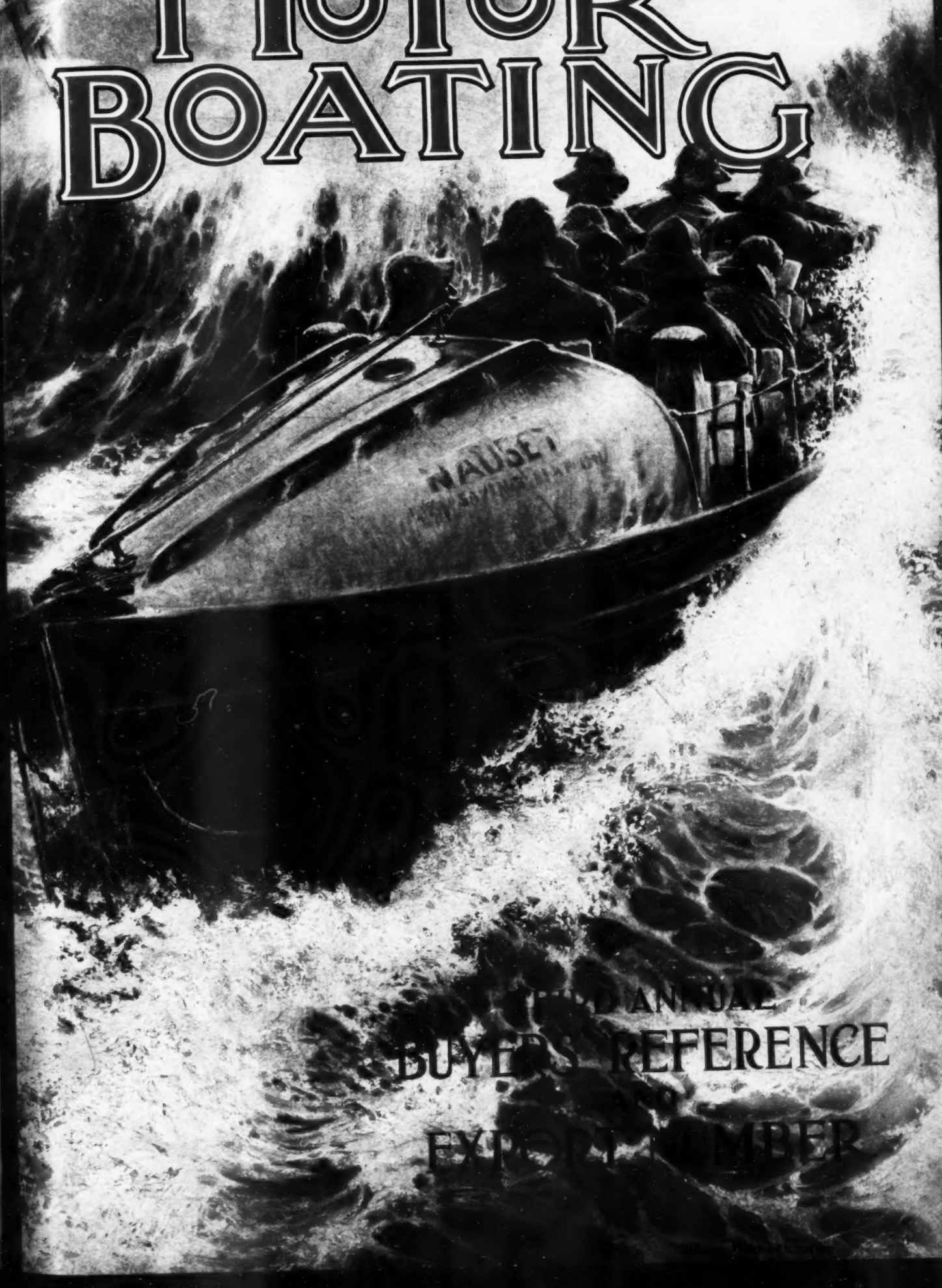

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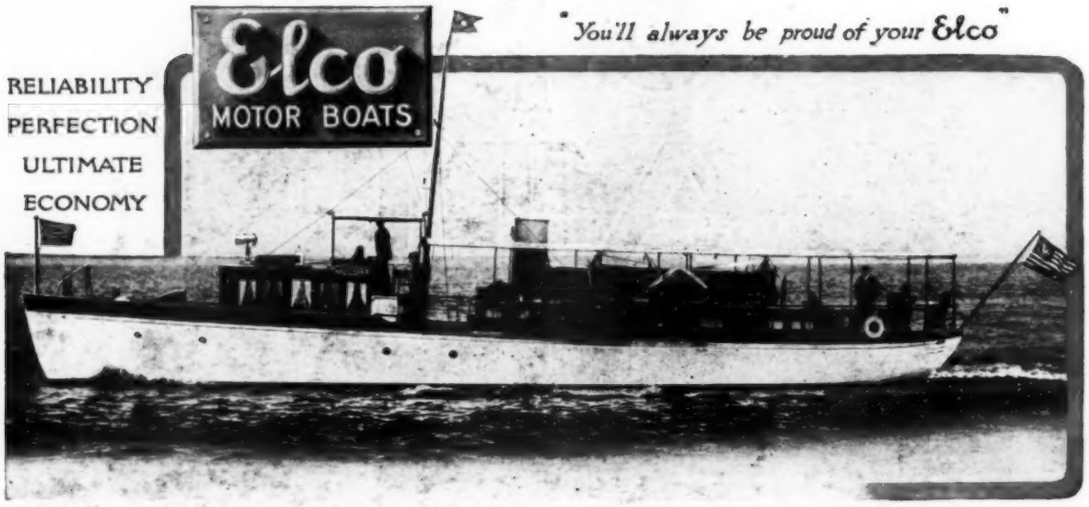

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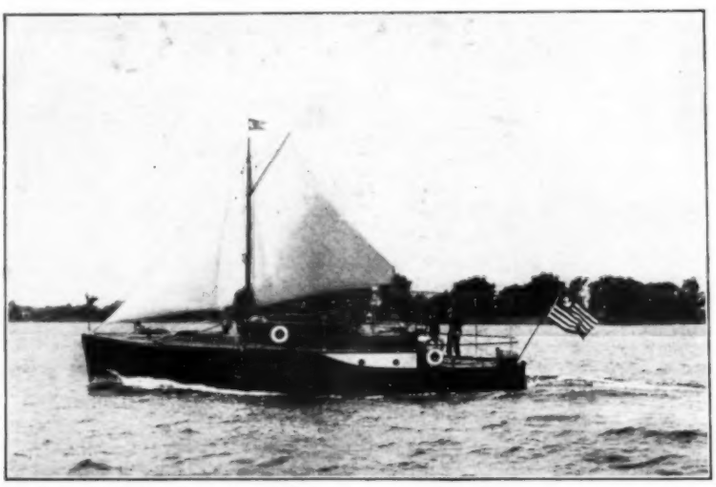

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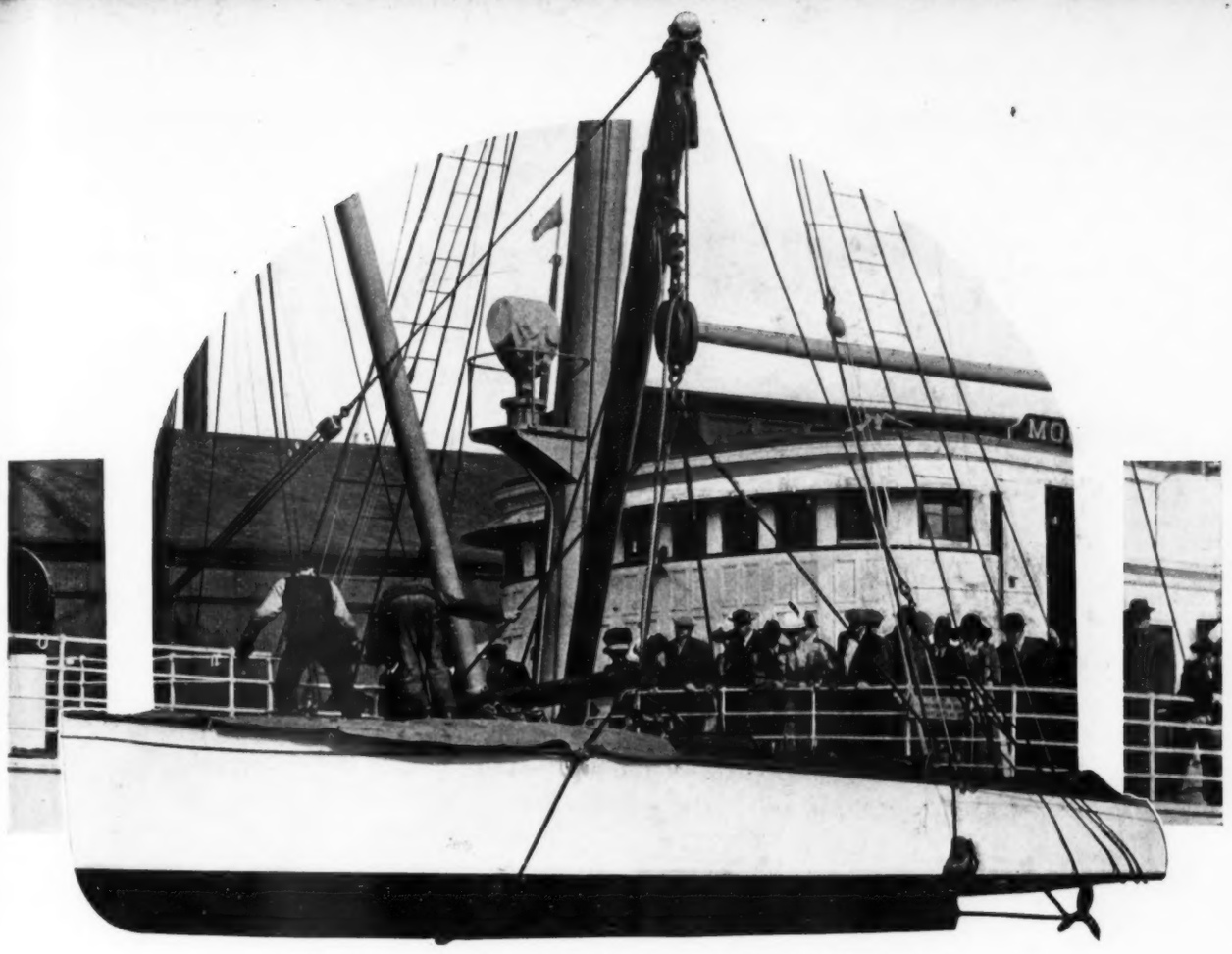

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MoToR BoATiNG

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Photograph copyright by Edwin Levick.

How it looks to be run down by a hydroplane. A striking photograph of the 16-ft. Elcoplane, Humpty Dumpty, traveling over 35 miles an hour. She belongs to Com. Ernest Lee Jahncke of the Southern Yacht Club of New Orleans.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

Querida's Cruise to Mecca, U. S. A.

Southward in November—Off with Typewriter and Camera for a Three Thousand Mile Run in a Twenty-five Footer.

By Bradford Burnham

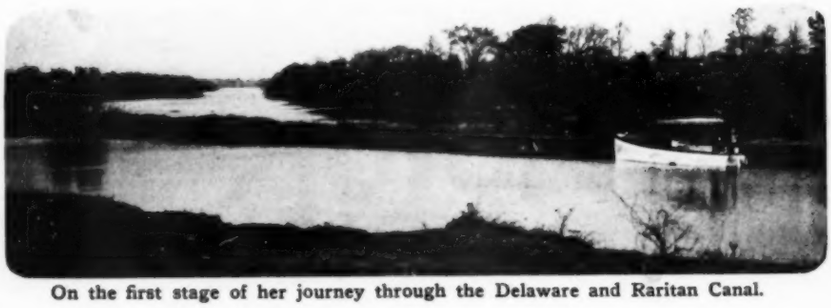
Photographs by Alfred F. Loomis.

Through "The Cruise of the Helen B.," "Cruising on a Dollar a Day" and his articles on the possibilities of the open boat as a cruiser, Bradford Burnham is already well known to the readers of MoToR BoatinG. When he dropped in a while ago and told us that he had obtained an indefinite leave of absence, we saw the problem of obtaining good winter cruising articles already fading away. Before the meeting adjourned this elaborate cruise was decided upon, and for the next several months he will tell us all about it. Mr. Loomis has gone along, too, armed with a complete photographic outfit. Watch for the results—they will be interesting.—Editor.

WELL, it looks as if we were really off at last! Querida II is underway for Dixieland, and more particularly for the Peninsular State, with its perpetual pineapples, its mid-winter roses, its oranges and its grapefruit; the land of the cypress and palmetto, the haunt of the crocodile and the Seminole. Florida, too, you know, has the longest sea-coast of any state in the Union, as well as the greatest profusion of navigable lakes, rivers, bays, sounds, inlets, bights, straits, harbors, and other collections of water imaginable. All of which gives her the most extensive inland waterway system in the country, and which, coupled with its mild winter climate, makes it the winter paradise of the motor boatman, the Mecca for every enthusiast of the king of sports, who is able to make an annual pilgrimage thither as soon as Jack Frost begins to chill the marrow and carbureter in northern climes. We're off at last to Mecca, U. S. A.

The "inside route" southward from New York is known at least by hearsay to every cruiser. Scarcely a lock in any of the canals remains unphotographed by one or more of the hundreds who are able to enjoy its pleasures and endure its pains each fall that they may winter under the warm blue skies of Florida. But nearly all of them throw off the switch at Jacksonville, St. Augustine, or at best at Miami. Only a few push around desolate Cape Sable, nose in and out among the keys, and climb the Gulf coast to Fort Myers and Tampa. And none at all have penetrated far into the mystic fastnessess of the Everglades, where fabled story tells us many a bold, bad buccaneer's treasure ship lies scuttled filled with pearls and golden loot; to enter from the eastern coast by way of a newly dug canal, the Great Lake of Florida, Okeechobee, 125,000 square miles in area and hardly anywhere more than fifteen feet deep; on westward through another canal and down the Caloosahatchie River to the Gulf; then on, still farther westward, past the Suwanee River and Mobile Bay, famous respectively for their sentimental and rag-time ditties; to cast anchor finally in the muddy Father of Waters off the waterfront of the Cotton metropolis—all in a twenty-five

The start of Querida II, the 25-footer, on her three thousand mile cruise from New York to Florida via the inside route and thence up the little-traversed west coast of the peninsula, through the Gulf of Mexico to New Orleans.



On the first stage of her journey through the Delaware and Raritan Canal.

footer! Or, if they have, they certainly have kept mighty quiet and have not told the readers of Motor Boating a single word about it. All this we intend to do, if the bilge pump doesn't wear out and the fly-wheel will continue to occasionally revolve by other than hand power; for the skipper and chief engineer have packed aboard their typewriter and Graflex and signed on with Motor Boating for a winter's cruise over the waters just mentioned.

To be sure, a considerable quantity of salt water and a goodly number of gallons of gasoline intervene between the alluring, malarial Everglades and the Delaware and Raritan Canal, on the surface of whose opalescent waters we are now basking—the rain coming down like water from a suddenly emptied lock. But who cares how far the journey or how wet the rain, so long as we can scratch a match on the inside—of the bilge? not on your life—on the inside of the cabin roof, and our ready money, the only article on our equipment list left behind, comes in fast enough to keep the chief's enormous sack of 'baccy, which we utilize as a fender in locking through, well filled. It's something, surely, to have got started.

And it's a good deal more to have triumphed over the seemingly impossible and to have actually stowed every article of our equipment on board and still find a few square inches left for the anatomies of skipper and chief. True, we reluctantly had to leave behind the sewing machine, the Steinway grand, and the chief's great Dane, and we couldn't have done it if we had stayed another day in New York and continued to think of indispensables. It doesn't matter much if the skipper did have to fish the typewriter out of the ice-box to commence this Chapter One, or if the article invariably within easiest reach is a bathing suit—with the temperature

The chief's sack of tobacco might be used as a fender in "locking through."

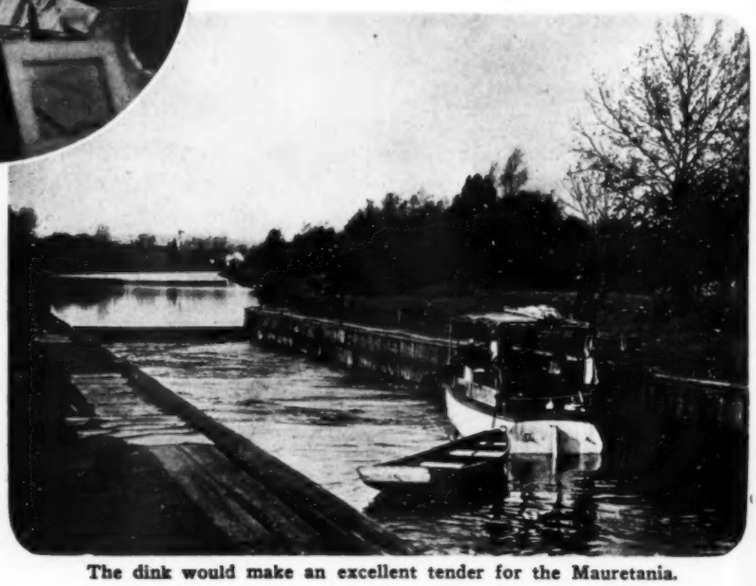
The skipper's smile at getting under way.

distinctly sub-polar. Such matters shrink into the tiniest of minutiæ beside the burning issue of whether or not we put salt enough in the oatmeal now boiling merrily on the Juwel burner, stationed comfortably in the improvised "cook-box" made originally to hold the typewriter, and which we are going to line with asbestos sheeting some day. That is one of the ten million little things "we mustn't forget to do as soon as we have time." Besides, while some of our well wishers seemed inclined to take our mountain of equipment slightly humorously, it is, every last shirt of it, the result of much study and not a little experience in the equipment necessary for extensive cruising on board a cruiser of smallest livable size. We fully expect to find a use as well as a place for every item on the list before we cast over the hook in the muddy waters of the Mississippi.

The initial chaotic condition of the equipment was partly due also to the fact that Querida II is very tiny, and is really meant to be a "day cruiser" only. During the agonizing days before the start, when we were distributing our savings among the different shipyards in the vicinity of New York, we had the little craft officially measured, with the following results: Length over all 25.16′; Length, water line, 24.92′; beam over all, 7.21; Beam, water line, 6.38′; Draft, 0.875′; Midship area, 5.58, Engine 2 cylinder, 2 cycle, Fay & Bowen, bore and stroke, 4½ x 4½, Horsepower, 9.36; Rating, 36.54. The rules of measurement used were the 1911 A. P. B. A. rules, and she was measured with crew of two and full cruising equipment aboard. Querida II has a nearly plumb bow, a square stern which is sharply tumble home, and an extensive cockpit which is covered with a waterproof khaki awning on pipe stanchions and battens. Her cabin is correspondingly small, but there is room for a tiny toilet room tucked up forward in the eyes of her bow, and with the equipment in the tender there is room for both of us to lie down full length on the bunks, neither of us being over seven feet tall.

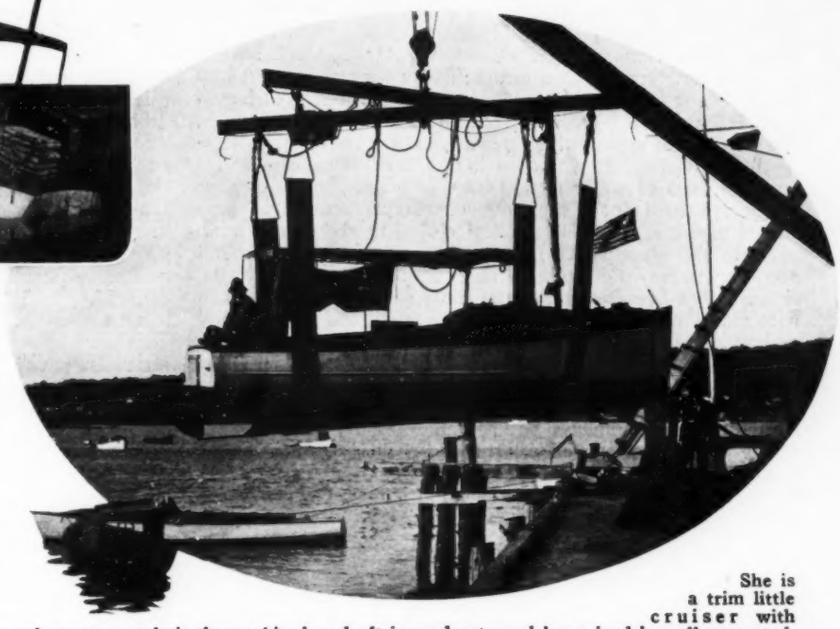
One of Querida II's measurements is not considered worthy of mention by the official measurer. It is the amount of headroom in the cabin. In our sober meditative moments we know that a twenty-five footer having full headroom is a top-heavy, unstable monstrosity, without which no anchorage seems complete, and so we put up with the discomfort for esthetic reasons and try to forget this impracticability in the conviction that our discomfort is in the interests of the beautiful in naval architecture. Possibly there may remain a few square inches of cabin roof against which neither the skipper's nor the chief's head has crashed, but I doubt it. In moments of such violent contact we assuredly don't care a hang if her design did originate on the boards of Morris Whitaker, or if her construction is of the finest that Anderson of Wareham, Mass., could turn out, copper rivets and all. Instead, we consider the feasibility of cutting a four-foot hole in the roof and installing the funnel from some ocean liner that we may obtain a way to straighten out the kinks in our backs. We hesitate about putting on another coat of varnish for fear it may make the cabin quite too small.

It is in the cockpit, however, that we expect to make our home when we reach Southern waters (wish we were there now; b'rrr). It is self-bailing, and the gasoline tanks, two in number, with a capacity of twenty gallons each, rest on the floor under the seats. A leak in one of them would drain off through the scuppers which, coupled with the fact that the engine is situated in the cockpit, housed in, but with flywheel within easy reach from the cabin, and the water-tight bulkhead which separates the cabin from the cockpit; insures freedom from gasoline or gasoline vapor in the cabin and there-



The dink would make an excellent tender for the Mauretania.

Before the start Querida was thoroughly overhauled for her long run.



She is a trim little cruiser with rather more cockpit than cabin, her draft is moderate and her wheel is well protected.

fore a maximum of safety. This large, roomy cockpit, her "emergency" cabin for wet weather, her shoal draft, and the fact that her propeller is tucked well up under her and protected by a stout iron skeg makes the boat admirably suited for use in Southern waters.

Our equipment for this trip includes a stout twelve-foot stick, set into a socket on the cabin roof and guyed with three strong pieces of wire rigging which are fastened by lanyards to galvanized eye-bolts, an arrangement serviceable, yet which may be easily detached and the whole outfit stowed on the top of the awning. We haven't blossomed out with the two sails bent to this little mast, a jib and spiritsail, which we trust will prove a very present help in time of trouble and save a little gas at other times.

We haven't got a regular galley, but the bacon and eggs meet with just as cordial a reception when cooked on our Juwel in the "cook-box," as does the fudge, too, which the chief learned how to manufacture long ago in true girls' boarding school style. Neither have we a fresh water tank and running water, but we find that somehow it keeps just as wet in a couple of earthenware jugs.

What we have got, though, is a dandy little engine which the makers, Fay & Bowen, Geneva, N. Y., have just returned to us with the assurance that she is as good as new, though she's been in commission several seasons. We expect that when our rapidly growing acquaintance has ripened into a more perfect understanding, a relation of mutual love and devotion will ensue with service and reliability heaped up so full that it runs out the scuppers and that we will reside together throughout the long run in perfect peace and harmony. We mix our lubricating oil with the gasoline, a little under one pint to five gallons, with fine success and little work. Each cylinder is equipped with a Kingston carbureter and the engine has make-and-break ignition with the Fay & Bowen device for advancing and retarding the spark—a distinctive feature of the product of this company, and a good one, precluding the possibility of backfiring and permitting finer regulation of the motor.

But we have a speed deterrent attached to us at present which we plan to do away with some day. Now, even the skipper will concede that a twenty-five-foot cruiser doesn't require a tender more than sixteen feet overall, and the chief agrees with him, having tried to paddle our ancient scow uphill against a hustling tide with a healthy young headwind. The skipper admits that he would prefer a dink decidedly less gigantic and ponderous, but about this collection of tired boards there hovers a thick layer of sentiment. It so happened that one fine day many years ago when far out on the waters of Fisher's Island Sound in Querida I, a member of a certain house party then on board suddenly sighted the derelict. An attachment was immediately formed (with a rope) and as soon as repainted the foundling was formally adopted and has followed the skipper around ever since. It tows like a water-logged raft and seems to prefer to be rowed backwards, but its proud owner is accustomed to its idiosyncrasies, and fondly imagines that it may some day save his life by serving as a sea anchor.

She carries a sturdy rig to help cut down the fuel bill.

The chief, who is also photographer to this expedition, spent considerable thought in the preparation of a photographic equipment complete in every particular. When the chest which was ingeniously designed to contain plates, plateholders, tripod, focusing cloth and the various other impedimenta necessary was lowered into the boat by a power derrick it loomed up like a moving van, but, wonder of wonders, it fitted into its niche on the starboard side of the engine as though the boat had been made for it. With the chief's fears on this score comfortably allayed and its fragile contents having successfully survived the bucking wash of the ferries and tugs of the upper bay he was able to devote his whole time to wondering how his cabin-darkroom would work out. So, as the darkness of the first day out settled down, he rigged up his electric lamp, and assembling his tanks he squeezed himself onto his bunk and prayerfully unloaded his plateholders.

The skipper lay at full length on the port bunk and prepared to learn the mysteries of darkroom work. He feels that he had a considerable hand in the ceremony, but the chief has since scornfully told him that he snored throughout. The plates were successfully developed and fixed, and were then hung over the side to wash, and if the pictures here reproduced show sundry specks and imperfections it is because the fish and eels of the D. & R. Canal saw them first.

On the whole the chief expresses himself as delighted with the ease with which photographic work may be done aboard a motor boat cruiser. Darkroom? Many is the traveling newspaper man accustomed to developing in the full glare of a street light shining through his curtainless hotel window who would think the Querida's cabin a seventh photographer's Heaven. Running water? More water runs by the boat in two seconds than ever ran through a darkroom tap. Electric fan for drying? There's always a breeze at full speed, and as long as the chief can swim after an escaped print he kicks not.

No, if lack of conventional darkroom facilities is the only deterrent to first-rate pictures, the chief thinks we'll have F. D. Coburn and the other photo-pictorialists seeking their laurels with a sixty-inch telescope.

Symmetrically opposed to the photographer's tarpaulin-covered chest on the port side of the gallant ship looms up what at first sight appears to be an Erie box car. A closer inspection, however, and an examination of the interior reveals the fact that it is a home-made icebox filled with cans and

jars. It was built with an eye to holding ice, but at present the mere mention of that chilly monosyllable gives the congealed ship's company shivers, shakes and shudders, so our icebox is now serving as a larder; and a very convenient and roomy one it is, too. Having been accustomed to cruising in open boats where there is seldom any such thing as dryness, the skipper has apparently gone batty on the subject of watertight receptacles. It would be hard indeed for the most inquisitive drop of water to find its way inside the mason jars which are used for containing such staple articles of provender as sugar, salt, flour, oatmeal, coffee, tea, butter and milk.

As to the quantity of food-stuffs carried, it is not at all necessary to crowd out other articles with a superfluity of eats, since, with a few exceptions, the route south is thickly dotted with places where the larder may be readily and conveniently replenished. It is wise, however, to have on hand enough for three or four good feeds, as frequently the anchorages and the stores are a long walk apart, especially for one who has just completed a long day's run. Then, too, on long outside runs there should always be kept an emergency supply consisting either of a few tins of army emergency rations or some hardtack and chocolate, for an offshore wind and a recalcitrant engine may mean a prolonged isolation from the comforts of home.

Occupying the largest space remaining unengaged on the cockpit floor rests the Trunk. Into this trunk all our clothing except that in actual use is supossed to be confined. With the assistance of a pile-driver it might be possible to accomplish this; without it it appears to be out of the question, and the cabin walls, liberally covered with an abundance of cuphooks, afford more or less permanent resting places for stray socks and khaki overalls. The trunk, however, takes care of our shore clothes in good shape, as well as the white flannels and summer finery with which we hope to array ourselves at times in sub-tropical America. In the readily accessible tray, too, stands our hospital kit, our library, and such aids to navigation as Coast Pilots, tide tables and "Notices to Mariners."

Our log to date is not bursting with important data of interest to MOTOR BOATING readers. So far, it is dwarfed into insignificance by the truly wonderful log of the cruise of the Helen B., which some of you learned about from the pages of this magazine some months ago. Next month, however, there will be more to tell of our actual cruising experiences. By that time we hope and pray to be in the less frigid waters south of Mason and Dixon's line, where we do not have to seal up the cabin hermetically with ourselves and the stove inside, and where we hope to find every day's run chuck full of adventure and thrilling incidents.

"Good Water."

The Second of Several Articles on the Needs of the Racing Game. A Phase of the Problem that has a Vital Bearing on a Successful Race both from the Pilot's and Spectator's Standpoint

By Commodore J. Stuart Blackton.

Last month Commodore Blackton gave us the first of several talks on the racing situation in America. The Commodore has owned and driven more speed boats than anyone else in the country, and consequently has ideas on how the sport should be conducted—not the theoretical ideas deduced by means of the slide rule and table of logs, nor the results of club veranda pickering, but those obtained in action at the wheels of the fastest boats in the world. Read what Commodore Blackton suggests for the betterment of the sport and see if you don't agree with him.—Editor.

Commodore Blackton.

"GOOD ROADS" has been the theme of many an automobile article, so why not "Good Water" for us jolly tars? Writing about motor boat racing is like walking through the Louvre or Westminster Abbey with a Cook's Tours party; one wants to linger longer than the guide (or the editor) will allow. Last month I got no further than the start of the race, and there is so much to be included in that strenuous period of time between the dash across the starting line and the boom of the final gun at the finish, that I fear this instalment will be only another lap.

Mr. Motor Boat "Fan"—did you ever hear of sane men playing championship billiards on a dirt road? Did you ever try to play tennis in a newly ploughed field? Would you try to make world's records in a racing automobile over rough cobblestones? Do you think Sir Thomas Lipton would be satisfied to race for the America's cup in the Erie Canal? All of these belong to the category of foolish questions number so and so, but none of the queries is more silly than trying to make speed records with the modern racing hydroplane in rough water. The fact has been proven so often there is no room for argument—racing boats are smashed, overturned, shaken to pieces or sunk every time the fool trick is tried. At Huntington, the big Maple Leaf made about thirty miles an hour in the rough weather of the second day's race and the smaller boats were lucky to be able to finish without going to the bottom. This was supposed to be a race for speed records. At Chicago, Kitty Hawk, Crusader and Baby Reliance all sank within three days, due to the high seas rolling on the lake. Commodore Pugh's powerful 40-foot Disturber III did about 20 miles an hour on the first heat for the Wrigley Trophy, Chicago quit after one or two rounds and the other boats wouldn't even start. That isn't speed boat racing; it is the kind of thing for the husky little ten or twelve mile an hour cabin cruisers to go into and prove their endurance and seaworthiness. Even if the light hulled, high powered racing craft manage to live through a thirty-five mile race in a heavy sea, no speed can be made—the expensive outfit is likely to be lost or badly damaged and the crew take their lives in their hands, all to no end as, if new speed records are not continually being created, the racing game will lose its attraction.

The handsome Weckler trophy.

Duncan Curry, Yachting Editor of the *N. Y. American*, offered a solution to the problem of "when is a race not a race?" in his article on the subject entitled "Time limit for motor boat races." One does not require to read his story—it's all in the title. Put a time limit on a thirty-mile race—if, through weather conditions no boat finishes within the limit, it isn't a race. If all the days of the International Races had been like the second, as to weather, Maple Leaf would probably have won the Harmsworth trophy at an average speed of 29 miles an hour—slower time than made by the Dixie of three years ago; and yet Lord Northcliffe offered his trophy to encourage an increase of speed on the water. How pleased (?) Mr. Wrigley would have been if his magnificent trophy had been won at the "phenomenal" speed of nineteen miles an hour! The Harmsworth deed of gift, drawn years ago, before hydroplanes were a factor, called for races to be run in "sheltered waters," when slow moving displacement boats were in vogue.

The necessity for "shelter" is far greater now with the great increase in speed. The word "hydroplane" itself implies literally "skimming along on water." Have you ever tried to make "ducks and drakes"—skipping a flat stone along over the surface of the water? Certainly you have! and you know how nicely it skims on a flat sheet of water, and how impossible it is to make it do anything but go "plop" and disappear when the waves are rolling in. Yes, dear Reader, you very quickly get tired of the fascinating game of ducks and drakes when the water is rough, and the gentlemen who spend their good simoleons for forty and fifty mile boats will also soon get tired of the game if asinine regatta committees and clubs, misguided by ignorance and inexperience, insist upon making the poor little motor boat bugs "play billiards on a dirt road." Remember—a cruiser, an ocean steamer, a sail boat and a displacement motor boat all go *through* the water When the surface is smooth, they push aside or displace a certain amount of water. When it is rough, they still plow through and the displacement is not greatly altered. Also remember that the maximum speed of the above mentioned craft is about thirty miles an hour.

The E. R. Thomas and Henry B. Clark trophies.

The hydroplane, on the contrary, does not plow *through* when at speed; it follows every curve and convolution of the surface and consequently instead of running partially through one wave and so on through each succeeding one, the hydroplane when striking heavy seas at high speed follows the curve of the first wave it comes to and if speed is not slackened it rushes up to the point of the wave and jumps into the air and incidentally hits the next wave a flat slap that puts the wearers of false teeth in grave danger of swallowing 'em "plate and all."

How can this be obviated? By running the boat slower, of course—but that is not making speed records—by making the hydroplane go through the water like other boats—but that displaces water and cuts down the speed and the boat is no longer a hydroplane. You who skate on ice know that when you are gliding *over* smooth ice you go very fast. How would you like to try skating over icy ground full of hummocks with sharp summits and steep sides. *Wouldn't it jar you?* And that is the way I feel when I see hydroplane races being run in rough water.

Mind you, *all* regatta committees and Motor Boat Clubs are not nearsighted. I enjoyed three days of the most splendid racing under the most perfect conditions (and admirable hospitality) at the Buffalo Motor Boat Club. Their race course is truly "sheltered waters" and as a reward for their perspicacity in picking out such an admirable spot for speeding, all world's records from five miles up to thirty-five were shattered, at their recent regatta. Out West (where they start motor boat races the *right* way—see last month's Motor Boating)—they also provide good, safe, sane, sheltered courses, their committees are competent and earnest, and the town that is lucky enough to be picked for that Mississippi Valley Regatta is just bursting with ginger and enthusiasm. Why? because, Mr. Motor Boat Fan, they provide "good water," they consider the public and run the races where they can be seen, and (here's a new subject I haven't touched on yet) they make the laps short so the people who take a holiday and dress in their store clothes and come down to the water to "see the boats go," will see them, and see them during all the race. Why should high speed boats be raced over ten mile laps or seven and a half mile laps? Why, when hundreds of thousands of people are crazy to see the really fast boats of the present day, should the thrilling sight of these space devouring little monsters be denied a public that is full of interest in the sport and will and does turn out in multitudes when races are properly put on. I was told during the International Races by a "prominent racing authority" (who had never set foot in anything faster than a slow yacht tender) that "the racing boats required laps with long legs in order to get up their maximum speed." Fudge and fiddlesticks, and then some more! I will guarantee to run Baby Reliance II from a standing start to a speed of forty-five miles an hour inside of ten seconds. An automobile gains speed slower, on account of change of gears, and in proportion as its momentum increases, and inversely a motor car running forty-five miles an hour will "coast" for a quarter of a mile on a level road if the brakes are not applied. A boat going at the same rate won't coast much more than three times its own length when the power is suddenly shut off. These are facts which you know, Friend Reader, but I mention them to support my plea for a short course—three miles around at the most, just up and down, a mile and half each way along the shore with a mark at each end and the start and finish in the middle. Given such a course, half a dozen or more boats capable of forty miles an hour and better, a racing committee that knows its business, and last but most important *Good Water*, and you have a combination that may rightfully be called THE SPORT OF KINGS.

The Wrigley trophy won by Baby Reliance II at Chicago, the most expensive trophy ever offered for a motor boat

The January Issue

The January issue of MoToR BoatinG will be the best all round number that has appeared. There will be another installment of Bradford Burnham's cruise; Mr. Hancock's cruise to Nowhere in a 16-Footer, illustrated with Hal Coffman's sketches, will be completed and Mr. Bonnell will tell of the return from Nova Scotia in his V-bottom runabout. There will be a lot more, besides the regular departments.

ABALONE

A Trim Sixty-Footer That is an Excellent Example of the Motor Yacht of Medium Size.

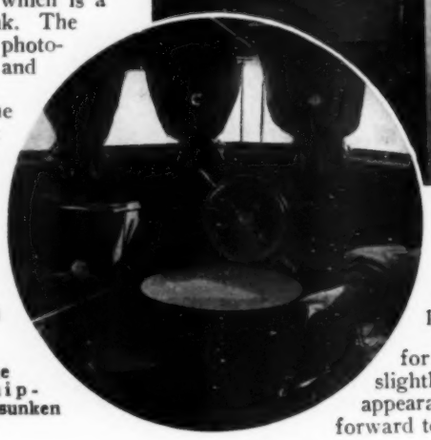
ABALONE, just delivered to Mr. E. H. Lyon by the New York Yacht, Launch & Engine Company, who built and designed her, is an extremely interesting example of the cruising motor yacht of medium size. She is 60 ft. overall, 50 ft. on the waterline and 12′ 6″ beam.

As shown in the photograph above, Abalone is of the raised deck type, the raised deck being continuous with the roof of the cabin trunk. There is a "pilot house" forward, the floor of which is sunk considerably below the level of the raised deck in order to decrease the apparent height, and this is used as a dining saloon, being equipped also with two transom berths

The raised deck is continuous with the roof of the cabin trunk.

and a duplicate steering equipment for use in bad weather. This dining saloon has several unique features, among which is a cabinet which houses a small sink. The arrangement is shown by the photograph at the bottom of this page and that at the top of page 13.

A passage way runs through the center of the boat from the pilot house to the engine room aft. On the starboard side of this passage is a stateroom similar to those in a Pullman car, equipped with upper and lower berth, bureau and washstand. Aft of this stateroom on the starboard side is the galley, in which is installed a large built-in ice-box, an alcohol stove and a dish and glass locker.

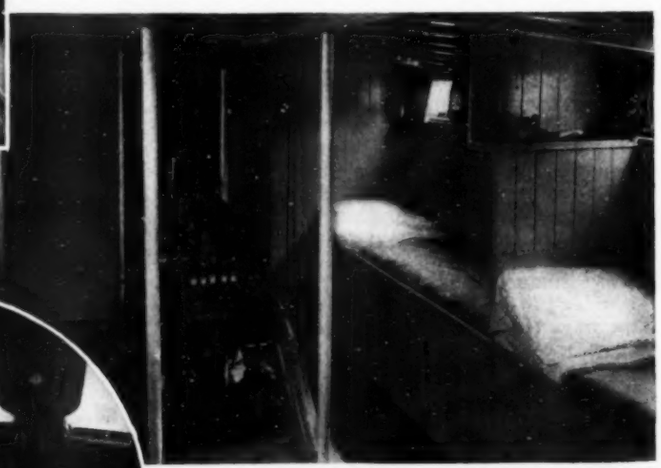


The duplicate steering equipment in the sunken cabin house.

On the port side of the passage, forward, is a bathroom, the plumbing for which was supplied by J. H. Curtiss and consists of a porcelain bath tub, porcelain wash basin and 4-inch patent pump closet. Aft of the bathroom on the port side is another stateroom similar in every detail to the one on the starboard side of the passage.

Looking aft from the bridge.

The engine room is the aftermost compartment beneath the cabin trunk and is fitted with berths for three men besides a private toilet room, a work bench and a chest of drawers. The engine is a Twentieth Century four-cylinder 6¼-inch bore by 8½-inch stroke also built by the New York Yacht, Launch & Engine Company and drives the boat between 11 and 12 miles an hour. The



The Twentieth Century motor and the novelty of real berths in the engine room.

complete cruising outfit with which the boat is equipped includes two boats, one of which is a power tender.

As to the model of hull, Abalone is well designed for general cruising. The raised sides forward, the slightly curved stem and the canoe stern all give an able appearance of seaworthiness. There is plenty of room forward to handle lines and ground tackle and there is space

The forward cabin showing the passage way to the engine room.

at either side of the forward house, making the forward deck easily accessible. There is a small flush deck aft, but the main deck space is on the roof of the cabin trunk which is continuous with the raised deck. More than ordinary room is obtained here by carrying the trunk out to the full width of the boat instead of leaving passage ways at either side. This also gives an appearance of roominess to the interior sometimes lacking in the usual trunk cabin construction. The bridge deck is roomy and is provided with a thwartship lazy-back seat and there is room for several wicker chairs. The steersman's position is well protected by the forward house.

Abalone, with Mr. Lyon aboard is now on her way south to join the fleet around Miami where she will remain during the coming winter.

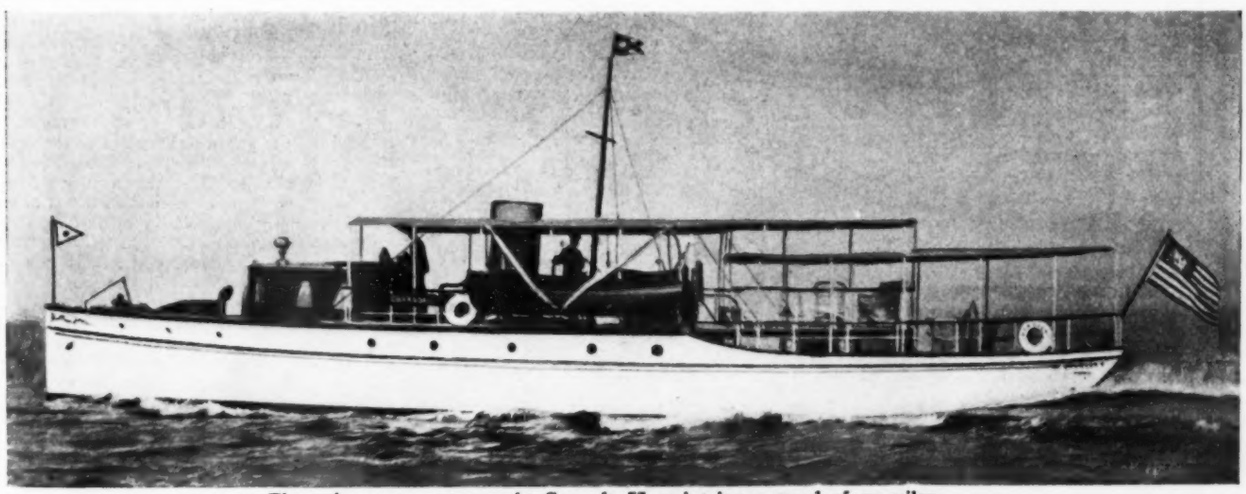
Granada II, Raised-Deck 70-Footer.

A Type of Craft That is Characteristic of Up-to-Date American Practice.

THE accompanying photo gives an excellent idea of the appearance of the 70-footer Granada II, designed and built by the Lüders Marine Construction Company of Stamford, Conn., for Mr. Herman Brill of Philadelphia, and described with plans in the August issue of Motor Boating.

This boat, since completion, has proven to be everything that was expected, and in spite of her usually ample accommodation, has a sustained speed of 13 miles per hour.

The dimensions of this boat are, length 71 feet, beam 12½ feet, and draft 3½ feet. The construction is strong and substantial, but presents no unusual features. The engine room is amidship, isolated from the rest of the ship by two steel bulkheads. The gasoline is carried in this same compartment. The motors are two 6½-inch by 8½-inch Twentieth Centuries.



The twin screw motor yacht Granada II maintains a speed of 13 miles.

To Nova Scotia in a 21-Miler.

The Ocean Cruise of Old Glory II, an Amateur Built 24-foot V-Bottom Runabout, from New York to Digby, N. S., and Back.

By Geo. P. P. Bonnell.

Ocean cruising in a V-bottom runabout is, to say the least, not a mollycoddle sport. Neither is it merely taking a chance, for Mr. Bonnell has driven his runabout enough thousands of miles, both day and night, along the Atlantic Coast to know exactly what she is capable of. He is a converted wind jammer and when he says that Old Glory II is as safe, hove to in a gale, as was Old Glory I, his auxiliary sloop, he says it from experience. If you are interested in this type of boat, or if you enjoy a real man's sport, you will read Mr. Bonnell's story.—Editor.

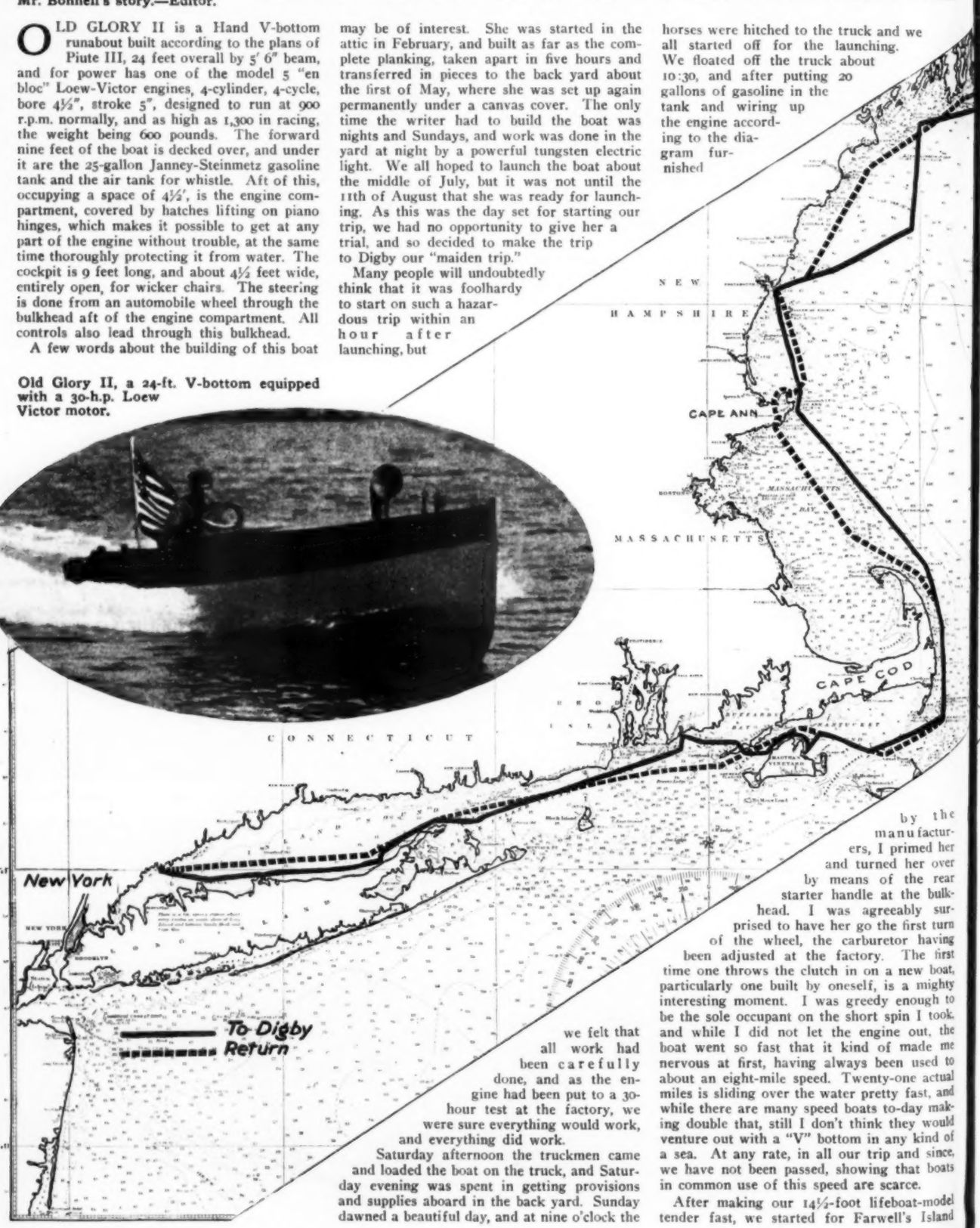
OLD GLORY II is a Hand V-bottom runabout built according to the plans of Piute III, 24 feet overall by 5' 6" beam, and for power has one of the model 5 "en bloc" Loew-Victor engines, 4-cylinder, 4-cycle, bore 4½", stroke 5", designed to run at 900 r.p.m. normally, and as high as 1,300 in racing, the weight being 600 pounds. The forward nine feet of the boat is decked over, and under it are the 25-gallon Janney-Steinmetz gasoline tank and the air tank for whistle. Aft of this, occupying a space of 4½', is the engine compartment, covered by hatches lifting on piano hinges, which makes it possible to get at any part of the engine without trouble, at the same time thoroughly protecting it from water. The cockpit is 9 feet long, and about 4½ feet wide, entirely open, for wicker chairs. The steering is done from an automobile wheel through the bulkhead aft of the engine compartment. All controls also lead through this bulkhead.

A few words about the building of this boat may be of interest. She was started in the attic in February, and built as far as the complete planking, taken apart in five hours and transferred in pieces to the back yard about the first of May, where she was set up again permanently under a canvas cover. The only time the writer had to build the boat was nights and Sundays, and work was done in the yard at night by a powerful tungsten electric light. We all hoped to launch the boat about the middle of July, but it was not until the 11th of August that she was ready for launching. As this was the day set for starting our trip, we had no opportunity to give her a trial, and so decided to make the trip to Digby our "maiden trip."

Many people will undoubtedly think that it was foolhardy to start on such a hazardous trip within an hour after launching, but

Old Glory II, a 24-ft. V-bottom equipped with a 30-h.p. Loew Victor motor.

horses were hitched to the truck and we all started off for the launching. We floated off the truck about 10:30, and after putting 20 gallons of gasoline in the tank and wiring up the engine according to the diagram furnished by the manufacturers, I primed her and turned her over by means of the rear starter handle at the bulkhead. I was agreeably surprised to have her go the first turn of the wheel, the carburetor having been adjusted at the factory. The first time one throws the clutch in on a new boat, particularly one built by oneself, is a mighty interesting moment. I was greedy enough to be the sole occupant on the short spin I took, and while I did not let the engine out, the boat went so fast that it kind of made me nervous at first, having always been used to about an eight-mile speed. Twenty-one actual miles is sliding over the water pretty fast, and while there are many speed boats to-day making double that, still I don't think they would venture out with a "V" bottom in any kind of a sea. At any rate, in all our trip and since, we have not been passed, showing that boats in common use of this speed are scarce.

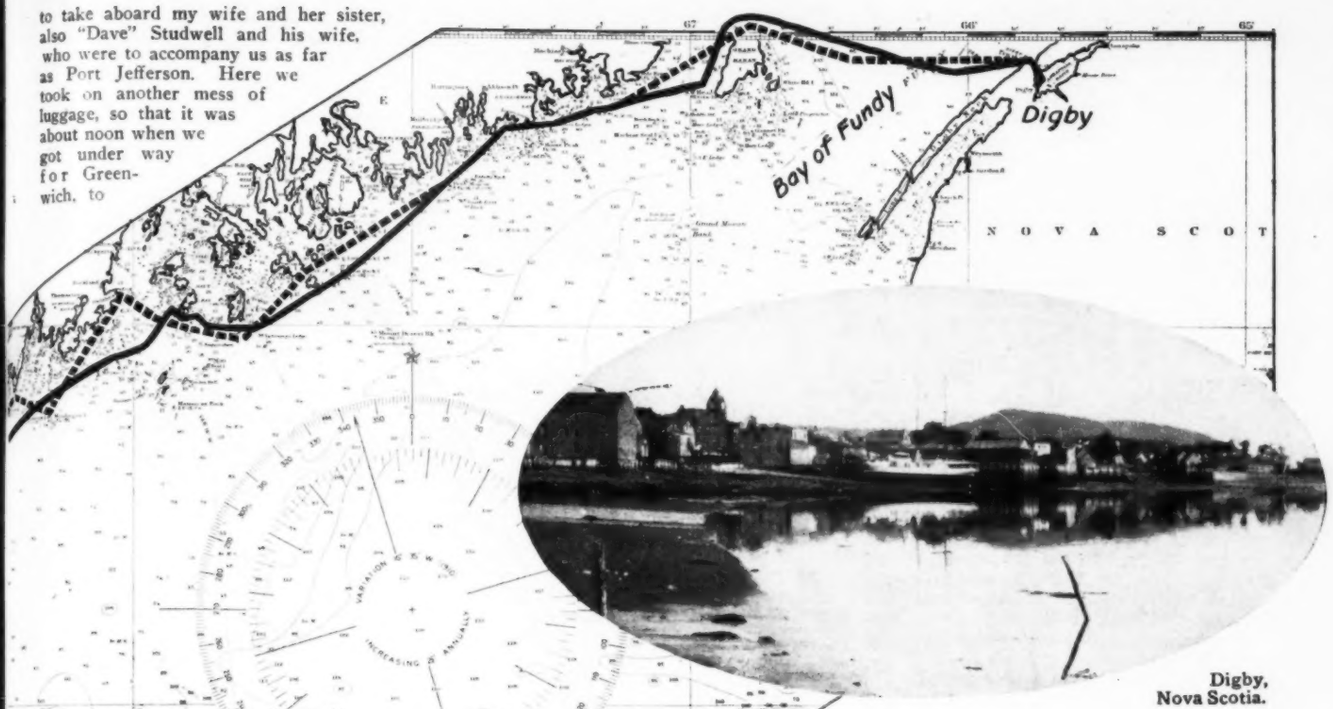


we felt that all work had been carefully done, and as the engine had been put to a 30-hour test at the factory, we were sure everything would work, and everything did work.

Saturday afternoon the truckmen came and loaded the boat on the truck, and Saturday evening was spent in getting provisions and supplies aboard in the back yard. Sunday dawned a beautiful day, and at nine o'clock the

After making our 14½-foot lifeboat-model tender fast, we started for Farwell's Island

to take aboard my wife and her sister, also "Dave" Studwell and his wife, who were to accompany us as far as Port Jefferson. Here we took on another mess of luggage, so that it was about noon when we got under way for Greenwich, to take aboard George Reed, who was to accompany us on the trip. When about a quarter of a mile off, we gave three blasts to let him know we would be at the dock in a minute. As we were expected there at ten o'clock, George was beginning to get anxious, particularly so under the jollying remarks of his friends about the impossiiblity of launching a boat and actually starting off the same day on a long trip. However, his good faith was shown by the fact that his leather bag was all packed and ready.

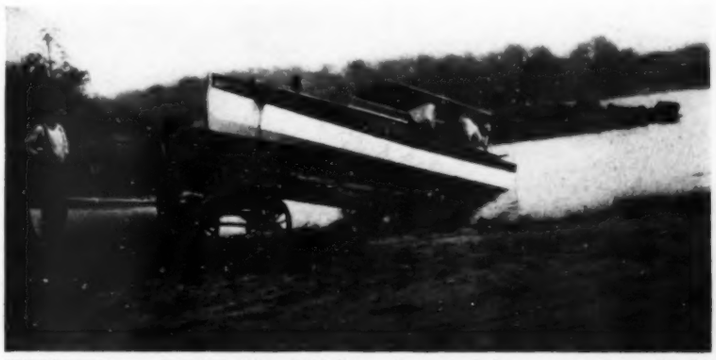


Digby, Nova Scotia.

After giving all his friends a chance to look over the boat, we started off at about 12:30 on our real trip. The weather was fine, being clear with a light southwest breeze, and we set our carburetor so as to give us an average speed of about 10 miles, as we did not want to run the engine fast until it had been run about ten hours. About half-way across the Sound, we noticed a strong smell of gasoline coming from the bilge, and surmised that in stepping around the engine compartment, I had touched the pet cock near the carburetor, put there to drain any water that might collect in the pipe. We don't know how much ran out of the tank before we discovered it, but enough went to give us the pleasure on being anchored out in the Sound all night later on, as mentioned later.

We made Port Jefferson about 3 o'clock, in time for our passengers to catch the boat running across the Sound to Bridgeport. After getting out in the Sound again, we ran the headlands on the Long Island shore, going about a mile off each of them. The stretch of land between Port Jefferson and Mattituck breakwater is one long bank of sand and bushes, and it is hard to tell just at what point one is on account of the similarity of the coast.

The first point we check up with after leaving Port Jefferson is Teslas' Tower, a round structure looking somewhat like a balloon situated some distance inland. Everything continued to run smoothly, and we were all tickled with the performance of the boat and engine, and naturally looked forward to the balance of the trip with much enthusiasm. Towards evening a light fog started drifting out into the Sound from the land, being carried by the southwest wind, and we opened the throttle a little more in order to make Mattituck before it became dark and possibly shut in good and thick. About this time I started to tell George that as soon as we got to Mattituck we would buy a few 5-gallon cans to carry extra gasoline in for long runs, and also as a precaution against running short by using up the tank and then having none whatever to reach shore. I don't think it was ten minutes later that the motor slowed down, back-fired through the carburetor a couple of times, and stopped. I knew what it was—lack of gasoline. We were about two miles off shore, which could hardly be seen through the haze, and so decided to make the best of the night afloat.



Within an hour after launching Old Glory she was on her way to Nova Scotia.

This was hardly our expectation when we started, but it was about the only thing to do, and as Long Island was the weather shore, the water was smooth and the motion of the boat comfortable. The first thing we did was to make our cockpit into a tent by stretching canvas from one side, over the top of the permanent khaki awning, down to the other side, thus leaving no joints to leak. The ends we covered fairly well, and then cooked something to eat. We made a comfortable bed for the girls later by spreading a mattress over the floor, covering them with blankets, and then with waterproof canvas. Having a couple of real pillows, they were almost as comfortable as at home.

We all had a fairly comfortable night, getting up about six a. m. It was decided that while George made some coffee and fried some eggs, I should go on a hunt for gasoline. Taking the chairs out of the tender, I rowed about two miles in an oblique direction to shore, where there were four or five cottages on the beach. There being no sign of life around, I decided to walk up a sandy road leading to the top of the bank or sand hill, and see what the view was. At any rate, there did not seem to be any sign of boat or auto around the cottages on the shore, and the prospect of gasoline seemed very slim.

The road seemed fairly well traveled, and after walking a mile, I beheld with joy an automobile in front of a farmhouse. It was my good luck to find it a small auto supply station and I bought all the gasoline they had left—7 gallons, two 5-gallon cans, and a funnel.

The people at the cottages were up and some of them in swimming, and apparently unable to understand the appearance of the strange tender. After telling them the "joke" on ourselves, I rowed back to the boat and was greeted with joy when I held up the cans.

Dumping them into the tank at once, the engine

started on the first priming, and we raced along for Mattituck Creek, knowing that we would get some "Eats" at the "Old Mill" kept by Otto Madegfrau and his wife.

It might be of interest to many Long Island Sound yachtsmen to know the whereabout of Mattituck Creek. It is about six miles west of Horton Point, and the entrance is marked by two stone jetties, the width between the jetties being, I should say, about 200 feet, and the channel being about 40 feet from the westerly jettie. The creek, which is about a mile in length up to the mill, has a channel giving six feet draught at low tide, and has considerable current. Do not get near the drawbridge at the mill, either make the dock or anchor before getting into the current (which runs with the speed of a mill-race). You will enjoy your stay at this quaint spot, and the cooking is fine. The walls of the "Old Mill" are completely covered with names, sketches, etc., of people who have visited there. Among them I noticed a drawing of the yawl, "Crow," and when I met the editor of this paper, I learned that it was his craft and that he was also an enthusiastic visitor of the "Old Mill."

It may also be well to remember that this is the only harbor between Plum Gut and Port Jefferson, and that the Sound is about 18 miles wide at this point, and with a northwest wind, I have seen a rotten sea off it, when the creek became a mighty good port. The breakwater is about 28 or 30 miles above Port Jefferson, but there is no light on it at the present time, and it is very hard to make it on a dark night without previous knowledge.

We decided to spend all day and Monday night at the Mill, and make an early start Tuesday morning. The first thing we did after a good breakfast was to take everything off the boat, even to the canned goods in the stern locker; lift up three sections of the slat flooring, and completely clean the bilge of all sawdust, shavings, etc., which are always prevalent in a new boat and which sometimes lead to a bunch of trouble if one gets the bilge full of water in rough weather and the pump chokes. After this was done, we put in the four chairs and started for the Sound to try her out. The engine having been run at moderate speed for possibly ten hours, we considered all bearings in shape to let her out. The result more than met our expectations, none of us ever having been in a speed boat.

We got under way at eight o'clock next morning. The day was fine, calm and somewhat hazy. We passed Horton Point at 9:15, Plum Gut at 10:00. Race Rock was abeam at 11:40, and we reached Point Judith at 2:45, with a fairly heavy sea running. Here our tank ran dry, and we refilled it from the 5-gallon cans. This was our procedure on all long runs, and at times it was quite a trick to hold a can over a small funnel and keep the gasoline from blowing or spilling all over the deck. However, we became expert at this after a while, and filled the tank in the roughest seas, when necessary.

Off Newport we passed through the New York Yacht Club fleet on their cruise back, a fine marine picture. We were bound for Westport, about nine miles up Buzzard's Bay, from Sakonnet Point, where Mr. Hand was spending a month with his Piute III, having the same lines and engine as our craft, and we had written him that we were going to drop in to meet him and let him look over our amateur outfit.

We had no trouble in making the mouth of the Westport River from the United States Coast Pilot description, and ran up the river to Westport Point, but did not see Mr. Hand's boat. Making inquiries we learned that he was out sword-fishing, and so we ran out to meet him, and passed him just at the entrance into Buzzard's Bay, bound in. The original Piute III was painted gray and looked very husky, and Mr. Hand told us he had harpooned many sword-fish from the "pulpit" on his craft during the month.

Wednesday morning Mr. Hand went out with us and tuned up our carbureter, thereby saving us over a gallon an hour, as it had been adjusted in Cleveland, and I had left it alone. We spent some time making preparation for the rough waters we now contemplated– Cape Cod, the Atlantic Ocean and the Bay of Fundy. We lashed securely over the tender a canvas cover protecting it from spray, and stowed everything securely. We also led our gas and spark control through the bulkhead, which we had not had time to do before launching.

The day was fine, with a moderate southwest wind, and at 11:45 we left Westport Point, accompanied by Mr. Hand in his craft, saving us the bother of picking our way through the Hen and Chicken reefs in Buzzard's Bay. He accompanied us as far as Quick's Hole, a passage into Vineyard Sound between two of the Elizabeth Islands, and there bid us "bon voyage," he being bound for the ocean somewhere off Gay Head, fishing; and we, through Vineyard Sound.

The "Vineyard" was a little choppy in places, due to tide against wind, but the boat ran very smoothly through it all, passing Vineyard Haven about 3 p. m. We decided to make Cottage City for gas and a good feed, before tackling the long run around Cape Cod and Cape Anne to Portsmouth, N. H. We were very nicely treated by Captain Joy, keeper of the Breakwater lights, and his wife, and at 6:15 p. m. we decided to start around Cape Cod, and after receiving the best wishes of all on the dock for a successful trip, ran out to Cross Rip Light Ship, where we hailed the ocean-going tug "Lenape," with three light tows. Asking the captain if he was bound for Boston and receiving an affirmative reply, we hollered that we would run on his port side as far as Race Point, Cape Cod. The reason I did this was because of the fact that the tug was making probably eight to nine miles, which was about as fast as I cared to run at night, and it would avoid all the bother of navigating through Nantucket Sound and around the Cape, and there are many courses requires in making this run. Having plenty of reserve speed, he would not be able to get away from us, and we could regulate our speed exactly to his. To anybody making courses at night by means of chart, course protractor, log, etc., without the aid of a cabin to work them out in, this tug business will appeal, as all one has to do is sit at the wheel and "let the other fellow do the worrying."

We accompanied the tug until 3:15 a. m. Thursday morning, the crew displaying an interest in us about every half-hour, I suppose wondering how such a small boat, with a gas engine, could run so smoothly and reliably. About midnight quite a fog made its appearance, and we could just about see the lights of the tug, and hear her blow her two blasts every minute (two blasts—one long and one short, denoting a tow) while we blew our one blast. The sea off the Cape was moderate. There appeared to be thunder storms all around, in the distance, and at times we could see flashes of lightning and hear thunder.

After leaving the Lenape, we headed west-northwest for Cape Anne, on the long run across the mouth of Massachusetts Bay. At times this stretch is mighty nasty, and we had it fairly rough with a sharp head sea, until about 10 o'clock in the morning, when it gradually wore down to a roll.

By and by we passed masses of seaweed and thousands of jelly-fish, and two sharks asleep or resting with their fins out of water, and two whales 300 feet off, spouting. We were out of sight of land a number of hours on this run. At 11:00 o'clock we passed a smack out after sword fish, with one man at the mast head scanning the sea. We passed closely, threw out the clutch, and checked up our bearing for Cape Anne. We mention this smack, as we met them in Rockport on the way back, and they gave us some interesting experiences on the "Squam" River, which will be told in the story of our return trip.

At 12:30 we passed Cape Anne, passing inside Thatcher's Island. We could see bottom at one spot. A number of Uncle Sam's battleships were lying inside the Cape off Rockport, and we passed close to several. The name Old Glory seemed to take well with the sailors lounging around the decks. From Cape Anne we headed straight for Portsmouth Harbor, passing inside the Isles of Shoals. There is plenty of deep water in this harbor, and also plenty of strength to the tide. The government has a navy yard there, and several ships were in. We headed for a gasoline dock where I had obtained gas in 1909 when returning from Digby in the auxiliary knockabout Old Glory, and were glad to find the same man at the dock. Leaving him in charge of the boat and asking him to fill the tank and six cans—we had bought two more at Westport—we all went to town and had a good dinner at "Ham's." Feeling pretty good after a good wash and the dinner, we decided to make an all-night run, as the weather seemed good and clear with a moderate north wind. We did not know it was going to blow hard at midnight.

Leaving Portsmouth at 7:00 P. M. Thursday, we headed outside of Boone Island, my practice in night running being, if possible, to go right out to sea, checking up with the lights on the outlying headlands or islands. It always seemed to me the wisest course, as with a strong, tight boat, sea anchor, etc., there is very little danger of foundering, while, unless carefully navigated, there are any amount of rocks along the coast of Maine that have grave possibilities. Besides that, the motion of the open sea is not so sharp and gives a boat a better chance, as a general rule, unless the wind is strong off shore and one wishes to keep in smooth water by laying pretty well in.

As midnight approached the wind grew stronger from the north, kicking up a nasty short high sea, which made it wise to reduce speed considerably to avoid the cap of the wave becoming too familiar. We were about twenty-five miles off Portland during the worst of this breeze, and had a rough night of it. Our course was laid for Matinicus Rock, many miles ahead, being the furthest-out island, but we changed our course about midnight so as to run in under the lea of the land as much as possible. The night was a cold one, and at times we ran as slow as two miles an hour.

It was here that the engine displayed its worth, for even at its slowest speed it never varied its even running, although we pitched about a good deal in the high crests. One thing that surprised me was that the wheel never raced, the stern always being in the water and the propeller apparently always having solid water.

We were glad to see the sun rise and get some of its warmth, and also that we had managed to work well in towards the weather shore of Maine, above Portland. The wind kept up pretty briskly all day, and we continued on our course up the coast at fair speed. While George steered, I managed to get a little hot dinner by holding the pots on the alcohol stove just aft of the bulkhead. The cooking problem in an open boat is no joke in rough water.

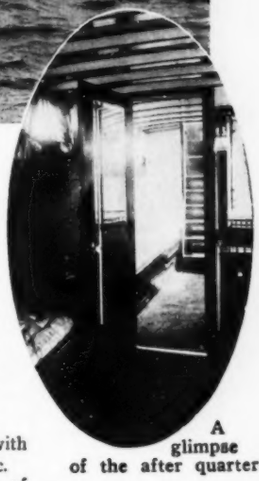
The scenery as one goes further up the coast is wonderful, the whole coast being studded with islands large and small, mostly covered with spruce, pine, etc.

We stopped at an island near Muscle Ridge Channel, about 5 o'clock in the afternoon, the name of which we have forgotten, in the hopes of getting enough gas to enable us to run all night. All they had was 17 gallons, which we took and, after spending about a half hour here, we decided to run as far as the town of Vinal Haven, on the island of Vinal Haven. We crossed Penobscot Bay, going by Hurricane Island, on which are located a number of stone quarries, and ran into Vinal Haven in the dark, depending on our eyes to keep us off the rocks. Some of these harbors are very ticklish runs at night without local knowledge or a harbor chart, and we were fortunate to work up into the town without touching anything. It was about half-past eight when we anchored.

(To be Continued.)

APACHE

The bridge deck.



A glimpse of the after quarters.

A Ninety Footer Equipped with Two 90 h. p. Motors—An Excellent Example of the Up-to-date Motor Yacht, Designed by Whittelsey and Whittelsey.

THE Apache is a 90-footer of 15 ft. beam and 4 ft. 3 in. draft designed by Messrs. Whittelsey and Whittelsey of New York, and built by the Hudson Yacht & Boat Company, for C. L. F. Robinson and N. B. McKelbie. She is equipped with two 90 h.p. Sterling engines which drive her at the rate of 15 miles per hour and is a splendid example of the large motor yacht.

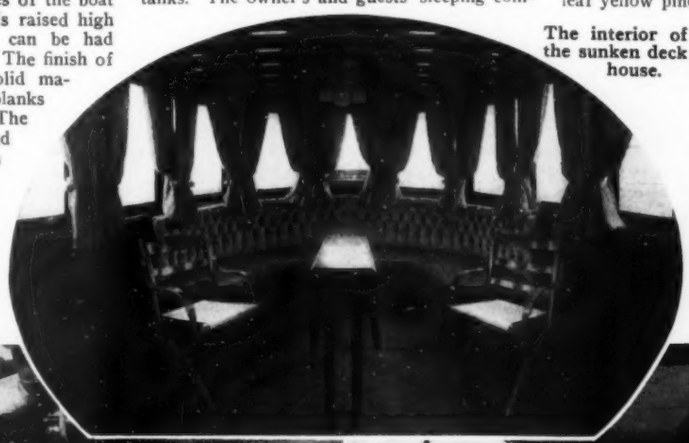
As shown, she is of the raised deck type with a sunken dining saloon, aft of which the bridge is located. The entire deck space abaft of the bridge is for the use of the owner. In fact, one of the principal features of the boat is the large deck space, which is raised high enough so that a view ahead can be had while seated in the deck chairs. The finish of the deck joiner work is of solid mahogany with white pine deck planks and mahogany plank-sheers. The dining saloon forward is fitted with a large buffet which contains a large dumbwaiter which leads to the galley below. There is ample room in this saloon to seat from 8 to 10 people at a 50 inch extension table. The bridge deck extends well across the vessel and the funnel which is aft of the bridge, is used for the exhaust of the motors.

Below decks the crews quarters are located forward, aft of which there is the captain's stateroom and a large store room. The galley is aft of this latter space and is considerably larger than is usually found on boats of this type. There is an ice box with a capacity of 1,500 pounds. The next compartment aft is given over to the engine. This room has full head room which affords good light and air for the engineer. Besides the two Sterling engines there is an Edison Electric Lighting outfit.

The gasoline tank compartment is aft of the engine room and is water tight and gas tight. The compartment is lined with copper and open to the sea. The tank capacity is 1,750 gallons contained in three rectangular copper tanks. The owner's and guests' sleeping compartments, which are aft, consist of three large double staterooms across the full width of the vessel, and also a large bath room. Each stateroom is complete in itself with bureaus, lockers, etc.

The construction of the boat is very substantial; the fastenings being copper or tobin bronze throughout. The keel is made up of very large oak timbers in long lengths thoroughly riveted to the bow and stern; the frame of steam bent white oak with heavy floors. The longitudinals are specially substantial being made from long length yellow pine timbers. The planking is of long leaf yellow pine or high grade stock. Apache is a very creditable addition to the fast growing fleet of large motor yachts.

The power plant consists of two six-cylinder, heavy duty, four-cycle Sterling engines of 6½-inch bore and 8-inch stroke, turning 400 revolutions per minute and weighing about 3,600 pounds each. The latest type of signal telegraph is installed between the bridge and engine room, to facilitate the manouvering qualities of the boat.



The interior of the sunken deck house.

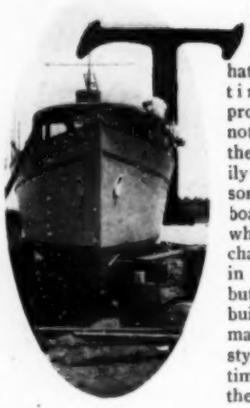
The two 90 H. P. Sterling engines and generator.

The raised deck continues aft as the roof of the cabin trunk.

The Trend in Motor Boat Design.

What Developments are Being Made and What Features are to Appear in the Designs of the Various Types of Motor Craft for the Coming Year.

By Frederic S. Nock



THE styles of boats, like the styles of ladies' hats, change from time to time. To prove that there is nothing new under the sun, one can easily trace back to some of the older boats certain things which, with a slight change, are adopted in many later designs, but, while a boat built a few years ago may not be out of style, at the same time it does not bear the earmarks of the up-to-date motor boat.

What are the distinguishing marks or points is a question that many persons will ask. It is a difficult question to answer, as every naval architect has his own ideas of certain things and as to what would constitute the up-to-date motor boat. However, there are none of the profession that would not glance with pleasure at a gamy looking, well balanced boat, and comment upon the style of same.

When we speak of style we cannot comment upon all classes of boats together, for what is a good form for a fast runabout would not be suitable for a large cruiser, and if we consider as examples the new boats being turned out by the best known naval architects today as good examples of the up-to-date boat, we cannot go very far astray.

Leaving out of the question the hydroplanes and extreme type of racing craft, and starting with the fast runabouts we see the clean-cut hull with plumb stem, rather straight sheer, liberal freeboard, and a transom, either of the V type or slightly rounded. The sections do not differ greatly from those of the past two seasons although there is evidence of an inclination to increase the flare of the forward sections and tumble home to a greater extent the after sections. The rudder is carried outboard and the steering lines where they are accessible. The engines are nearer the center of buoyancy, and the tanks, instead of being carried aft or forward, are set nearer amidship. A hood protects the engine and there is evidence of marked improvement in the layout of the controls, etc., on the bulkhead. Spray and windshields, similar to those used on autos

Mr. Nock is particularly well able to talk on the trend of motor boat design. Not only does he design motor craft of all types and sizes, but he builds them, too, from his own designs and from those of other architects, and knows from experience just which features are practical and which are doomed. —Editor.

but made to drop into pockets or fold down on deck, are shown on most of these boats.

Among the small cabin cruisers one finds but little change from those of last season. In fact, the general tendency seems to lean toward the raised deck type with plumb stem, and a transom stern practically plumb. Of course, there are exceptions to this type for

Frederick S. Nock, naval architect and builder.

small cruisers but in the majority of cases this applies to the cruising boats of 28 to 35 feet in length.

Perhaps the greatest change is shown in the cruisers of 46 to 60 feet in length. Both the compromise and transom type of sterns are in evidence, but where the transom stern is used, there is a decided change in the right direction. Many of the cruisers with a transom stern had very full waterlines aft, which same, while preventing the stern from settling to any great extent, made the after end so full that the boat was not easy in rough water. The waterlines are much finer aft, allowing the stern to settle a trifle, but making the craft easier in rough water. The plumb stem seems to be popular but some of the new boats show a slight rake to the line of the stem. The forward sections are a trifle fuller and the excessive flam is not so much in evidence, although there is more flare. Where the compromise stern is adopted there seems to be little or no change, but there is a tendency to increase the tumble home to the topsides when the V stern is used.

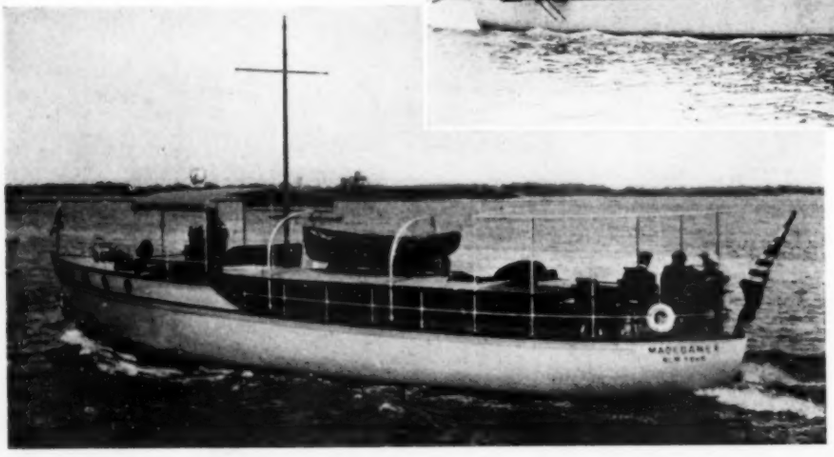
The arrangement of the superstructure is varied to meet the different conditions, but among such craft as are designed for use along the coast in summer weather the prevailing style has the raised deck forward with a bridge and a trunk cabin aft. The sides of cabin trunk are fitted with swing sashes, and exposed places, such as the forward end of cabin trunk and sides of the raised sheer, are fitted with air ports. Ample provision is made for ventilation with cowl ventilators and in some cases, a stack. Many of these craft have a small trunk forward, and in the larger boats this is utilized as a dining-room, and as a pilot

Artmar, a raised-deck 60-footer of the double-cabin type, designed and built by Mr. Nock.

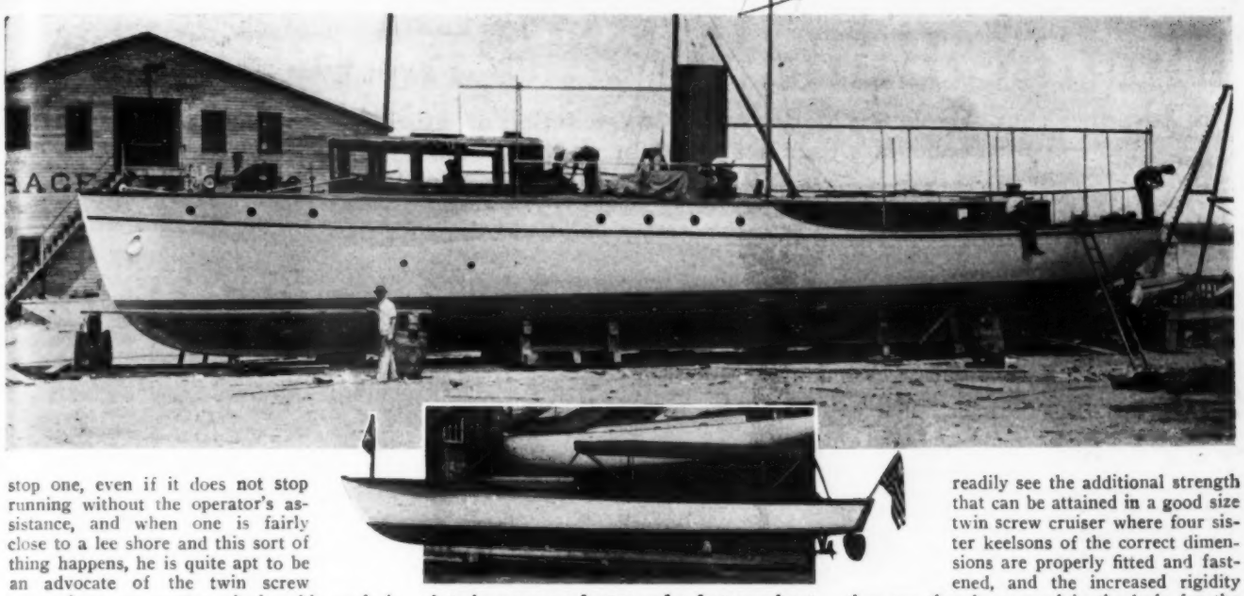
house in heavy weather.

The boats designed for off shore cruising show spars better adapted for carrying small sails than those of the past, in many instances the masts being stepped in the keel instead of on the deck.

In spite of the fact that twin screws are not considered as efficient as the single screw, there is a tendency to use them where the boat is large enough to accommodate same, and the reliability is thereby increased. We all know that the gas engine of today is very reliable but there are times when it is advisable to



Madegare II, another 60-footer of Mr. Nock's design. This boat is one of the largest examples of a type that has become extremely popular.



A twin-screw 75-footer and a fast runabout, both of which show the same trimness that characterizes the Nock designs.

stop one, even if it does not stop running without the operator's assistance, and when one is fairly close to a lee shore and this sort of thing happens, he is quite apt to be an advocate of the twin screw power boat, no matter whether his craft is equipped with single or twin screws.

Bridge deck controls are popular and the majority of the cruisers are so arranged that with the exception of starting the engine it is entirely controlled from the bridge. There is marked evidence of everything to help the navigator. A tachometer records the revolutions of the engine, a speedometer shows how fast one travels under all conditions and it seems that there is but little chance for the man at the wheel to go far astray if he attends to his business.

As to the interior arrangement, there is little or no evidence of anything radical. Accommodation plans are usually arranged to meet the requirements of the owner, irrespective of the general appearance of the boat.

Among the larger craft, of say from 75 to 120 feet in length, there are few new styles. There is little or no evidence of the use of the V stern, and the yacht stern with a form of plane below the waterline to prevent it from settling to a marked degree is shown on some of the fast yachts, but not on the average cruiser. The steamship type of stern is not as popular as it was in the past, but the compromise stern seems to dominate.

The line of the stem is fairly straight and rakes forward a trifle. As to the lines there are little or no radical changes in same, but there is a tendency to liberal freeboard, and while the smaller craft show indications of the raised deck forward, this is not so with the majority of the larger boats. Deck houses are popular, and are shown on many of the larger craft.

The power plant comprises two units driving twin screws, and while there are instances of the use of triple screws, they do not seem to be favored to any great extent.

As these large power boats are of so many different types and styles, it is unfair to claim that any particular one is the most stylish, as each has its individuality and merits, and it would take up considerable space to touch upon the respective values of the different points.

There is ample indication of the tendency to reduce the size of the scantlings of the modern cruiser and instead of trying to obtain strength by adding a lot of useless material and thereby adding unnecessary weight, the important members are being worked out scientifically. One member that shows an increase in size is the keel, and the addition of sister keelsons is another step in the right direction. These sister keelsons, when carefully fitted over the frames and floors and securely fastened, materially increase the strength of the boat longitudinally, and they are important factors in helping to distribute the strain and vibration of the engine, as the fore and aft bearers are usually fitted inside of the sister keelsons and well bolted to them. One can readily see the additional strength that can be attained in a good size twin screw cruiser where four sister keelsons of the correct dimensions are properly fitted and fastened, and the increased rigidity they can thus be secured in the beds for the engines.

More care is shown in the framing of the decks in the wake of the cabin trunk, the dimensions of clamps, etc.

Bulkheads of metal or wood are now given far more consideration than they were in the past. Trunk sides and all superstructures are constructed in practically the same manner as in the past, with the possible exception of those on the medium size cruiser which are fitted with swing sash, and every effort is being made to work out a trunk side that will be tight and strong, having at the same time sash that will be watertight when closed.

Instead of the gasoline tanks being placed under the after deck or in some out-of-the-way place, when the boats are large enough to make it practicable to have the tanks nearer amidship it is being done, and while the majority of gasoline tanks were formerly made of copper, many of the larger ones are now constructed of steel, either tinned or galvanized. Such tanks, being much stronger, are less subject to leaks and are better able to stand the strains imposed upon them by the liquid which swashes around when the boat is running in choppy water. The gasoline pipes are of greater diameter and are made of annealed copper or a soft grade of bronze, and the joints are either brazed or made up with compression fittings. Air vents and filler pipes are being arranged so as to reduce to a minimum the danger of leakage of gasoline.

Suggestions for the Boat Buyer.

By Gerald T. White.

THE man who has planned to have a new boat for next season should start negotiations now. It makes no difference whether he wishes to buy a second-hand boat, or is going to have a boat built to his order. He can get more for his money now than he can in a few months from now. This is due to the fact that builders are not so busy now as they will be later in the season, and they can afford to make a small profit on the boat as long as they can keep all their men working full time, and thus cut down the overhead expenses that play such an important part in the running of a shop of any kind. It costs just as much to keep machinery running so that one boat can be built as it does to keep it running when a lot of boats are building, and the expense is divided up amongst the various hulls.

In ordering your boat early you also are fairly sure that it will be ready for you when you want it, and you can therefore take advantage of every bit of the fine spring weather for sailing instead of haunting the shops and wondering if your boat is going to be ready by July Fourth. When the men have plenty of time to build a boat they are always more careful of the kind of work they do, than when they are rushed to death by the knowledge that a job must be done on a certain date in order to get to work on another job.

There are several reason, too, for buying a second-hand boat early in the season. In the first place every true motor boatman builds, in his mind's eye, a new boat every year. The construction of this dream boat is apt to start about October and too frequently vanishes shortly after Christmas. During the time that the owner is planning his new boat he will often be willing to let his old hull go at a ridiculous price as he feels that his new boat will be so much of an improvement over his present hull that he would never be happy with the old boat. After Christmas has come and gone, and he has purchased presents for Jimmy and Mary and Frank and Cousin Jane and Uncle Peter and for his wife to give him and has tipped the elevator boy and the ice man and the janitor and the——, but you have all been there, so what's the use. You know that feeling of financial dejection and the vows of economy that come over us all after the annual day of graft, and in nine cases out of ten the boatman realizes that he will never be able to get his new boat unless he gets a big price for the old one. Consequently, you, who have delayed, pay that big price and help him to get his new boat.

Getting in touch with a yacht broker is the easiest and perhaps the most satisfactory method of buying a second-hand boat. Let him know exactly what you want, and how much you will pay for the boat, and he will send you descriptions of various boats that he has listed that comply with your requirements.

No matter how you choose to discover the boat, there is one thing positive: it's the early buyer that gets the pick of the fleet. So start hunting now.

Engine Building and Its Outlook.

The Advances that Are Being Made in the Construction of American Marine Motors and the Tendencies that Are likely to be Followed in the Future.

By C. A. Criqui.

President of the Sterling Engine Co.

Mr. C. A. Criqui.

When we asked Mr. Criqui to give us a little article on the present trend in the building of marine motors, we could think of no one whose ideas on the subject would be more authoritative than his. Mr. Criqui is not merely the head of a very successful engine industry—he is a thorough going sportsman. There is seldom an important racing event that he does not attend and he is thoroughly in touch with conditions in all parts of the country. He speaks from the inside—Editor.

LOOKING back over the season of 1912 in the marine engine industry, one cannot help but marvel at the tremendous improvements which have been made in design and construction. Each year naturally brings its changes, but never have we seen such remarkable strides toward the perfection of the four-cycle gasoline engine as during the last twelve months. These changes have not been of a radical nature, but simply sensible and practical. They harmonize with the work the different types and sizes are being built to meet, and have greatly broadened the field of the marine engine both for pleasure and commercial work.

The modern engine is now built so substantially and of such perfect design that one can venture on any voyage without fear of trouble. The requirements of a marine engine are greater than those of the automobile engine. There are no flat roads and down grades, no chance for the power plant to loaf or to be aided by the momentum of its load, but a steady pull for the marine engine, equal to a continuous up grade for the automobile. The owner of a motor-driven boat when he sets out on a cruise does not expect to find the same facilities for repair work on the water that he would on land. It was therefore incumbent upon the engine builders to produce a machine that would meet all requirements; one that would faithfully perform its duties under the most adverse conditions and insure the owner against the possible danger of having his power plant stop when he was miles away from the nearest port and machine shop.

The farsighted manufacturer has concentrated and specialized on the designing of a machine that was simple, practical and strong. He tested out the individual parts that bore the stress of the hardest use. He used the best material obtainable and employed the most skillful labor. The result is an engine that instills confidence into its owner; one that he can drive into the most remote districts with the assurance that it will bring him safely back again.

The experience of the builder with the larger machines naturally had its effect on the smaller models designed for runabouts and open pleasure launches, and these have been so simplified, perfected and refined that the sport of motor boating has had a tremendous growth the past year and has attracted hundreds of people who heretofore hesitated about getting into the game, fearing an engine was too complicated a piece of machinery for them to understand.

One factor that is of inestimable value to the manufacturer in turning out "quality" engines, is the keen competition in the racing game. The sport has been kept clean, and engines for the most part that power the famous speeders are stock motors and are owned and raced by private individuals, regardless of occasional statements to the contrary. The terrific test these motors are put to brings out every possible weakness and the experience the builder gains is felt throughout his entire product, not only in the racing type but in the heavier models for cruising and commercial boats.

American-built engines surely made a brilliant showing the past season, and while our boats failed to hold the International Trophy in this country for another year, we are not a bit discouraged. The American people are noted for their sportsmanship, so let us take our defeat gracefully. We lost fairly, but were very kindly left the satisfaction of knowing that our boats and engines are a little faster than those of our foreign friends, and that the championship was forfeited through petty, unfortunate accidents.

The racing season just past ought to be of great benefit to the accessory manufacturer also. Let him profit by the obstacles encountered during the big regattas and next season, when we are given another opportunity, be better prepared to meet them. The pounding, twisting and bending of a racing hydroplane driven at express train speed for thirty and forty miles at a stretch, is a severe strain on the power plant and its accessories. If not built of substantial materials and properly designed, something is going to break. I believe the engine manufacturer is doing his part. He has produced a motor that fully stands the test. Now let the accessory man get busy and improve his product to meet these new conditions. Carbureters are being designed to hold their adjustment while the boat is pounding along at speed. Their valves should not jar open from the excessive jolting and thus flood the cylinders with gas. Ignition systems are being improved and numerous other parts which are not made by the engine builder doubtless will be made more dependable through this experience. The American manufacturer will go to it to meet the demand and requirements.

In the medium and heavy-duty class, engines suitable for cruisers and commercial boats, there has been a gradual trend in design away from the heavy and cumbersome motor, toward an engine of equal power, but of refinement—lighter in weight, with strengthened working parts of finer materials. The experience gained through the racing game is a very remarkable asset to every type of engine and this is strongly felt in designing heavy-duty motors. In the cruising and commercial field there are unlimited possibilities for the engine builder, but to successfully develop them and make the most of opportunities, it is necessary to dig down deep and study conditions. Weight, for instance, is generally a factor to be reckoned with. It isn't necessary to use a huge, ponderous machine to drive a heavy outfit. A motor of lighter construction, properly designed and built, will give the same power and results. If the boat owner is looking for ballast, let him buy real ballast and not use his engine for this purpose, then place the ballast where it will do most good.

The refined motor has gradually found its way into the cruisers and work boats in the East, and it seems to me that it is only a matter of time when the far west will look upon this type of motor with more favor than it does to-day. The heavy power plant was first introduced and the users became accustomed to it. It was tolerated because they knew no other type. Results that are now being obtained with the improved motors indicate that the heavy, cumbersome engine is gradually losing favor, just as the old heavy type steam engine has been supplanted by the lighter models of to-day. The past season has seen hundreds of converts who have pulled the heavy steam boilers and engines from their boats and substituted gasoline engines. They made the change to increase their carrying capacity and profits and they will make this increase through the use of a lighter power plant and its attendant good features.

Smoothness of action while running is another feature that is considered and is making the gasoline engine more popular.

The industry as a whole, I believe to be in a sound and flourishing condition, and I believe I voice the opinion of a number of reputable engine manufacturers when I say that the past season was more fruitful than the preceding one and that even greater results are expected this coming year. This statement is borne out by the fact that several manufacturers are enlarging their plants in anticipation of this increase. Of course, success cannot continue if the boat owner is not given an engine which meets his requirements in every way, and if the engine is not backed up with the proper service.

Interest in motor boating is increasing steadily, which means increased business for the manufacturer. It remains for that individual to give the owner what he wants and stand by him until he is satisfied. Changes in design will, of course, be made from time to time, but these changes, I believe, will be in the form of refinement and improvements and in simplifying the engine as a whole, rather than the designing of entirely new machines.

Aside from the commercial standpoint, we all know that motor boating is about the most healthful and safest means of recreation in which anyone can indulge; far safer than automobiling, motor cycling, canoeing and many other outdoor sports, and it simply remains for the engine and boat builder to keep it as clean and pleasant as possible. The natural facilities for the sport in this country are unlimited and it is only reasonable to believe that interest in motor boating will continue to spread and the engine industry remain in the same flourishing condition.

Tech Jr.

American Marine Motors

Tabular Specifications of the Complete Product of the American Manufacturers of Marine Motors and Illustrations of Representative Models of the Various Makes.

MOTOR BOATING

Achilles.

ATKIN-WHEELER COMPANY, HUNTINGTON, L. I.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	75	4	5	7	1000	8	690

American.

AMERICAN ENGINE COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1913	2	2	3	3½	100-700	1	90
"	4	2	3 9/16	3½	100-700	1	155
"	6	2	4⅜	4½	100-700	1	180
"	8	2	3½	3½	100-800	2	175
"	8	2	5⅛	5	100-550	1	300
"	14	2	4½	4½	100-700	2	250
"	20	2	5⅛	5	100-600	2	550
"	30	2	4¼	4½	100-900	4	600

Armstrong.

LACHINE MOTOR WORKS, LIMITED, LACHINE, QUE.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	6	2	3½	3½	950	2	130
B	9	2	3½	3½	950	3	180
C	12	2	5	5	750	2	350
Special D	25	2	5	5	900	3	*320
Special E	60	2	5	5	950	6	*700
F	25	4	4¼	5½	850	4	†490
G	40	4	6	6½	550	4	‡1400

* Aluminum base.
† Iron or aluminum.
‡ With clutch and iron base.

Aristox.

BLACK ROCK MACHINE COMPANY, BRIDGEPORT, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Twin screw, double opposed pistons and crankshafts.	8	2	3 3/16	3½	550	2	
	12	2	3 3/16	3½	550	3	
	18	2	4	4¼	550	2	
	27	2	4	4¼	550	3	
Electric light'g plant and canoe motor.	1	4	2¼	2¼	1000	2	

The Automatic.

THE AUTOMATIC MACHINE COMPANY, BRIDGEPORT, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
Snapper	3	2	4½	4	500	1	*200
"	5	2	5¼	5	500	1	*340
Cruiser	3	4	4½	5	800	1	300
"	6	4	5½	7	450	1	643
"	12	4	5½	7	450	2	1115
"	18	4	5½	7	450	3	1425
"	24	4	5½	7	450	4	1800
Heavy Duty	12½	4	7½	9	375	1	1570
"	25	4	7½	9	375	2	2625
"	37½	4	7½	9	375	3	3465
"	50	4	7½	9	375	4	4430
"	75	4	7½	9	375	6	6500
"	75	4	10	14	275	3	8000
"	100	4	10	14	275	4	11780
"	150	4	10	14	275	6	15300
"	90	4	10½	15	275	3	
"	120	4	10½	15	275	4	
"	150	4	10½	15	275	6	
"	200	4	12	16	250	6	Revers'g engines
"	250	4	13½	18	250	6	

* Weight without reverse gear.

Anderson.

ANDERSON ENGINE COMPANY, CHICAGO, ILL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
	2½	4	4	4	600	1	250
	4	4	4½	5	550	1	375
	5	4	4	4	600	2	350
	8	4	4½	5	550	2	550
	12	4	5	6	500	2	850
	18	4	5	6	500	3	1100
	24	4	5	6	500	4	1350
	25	4	7	8	450	2	1200
	37½	4	7	8	450	3	1700
	50	4	7	8	450	4	2200
	50	4	9¼	11	400	2	3250
	75	4	9¼	11	400	3	4300
	100	4	9¼	11	400	4	5350
	150	4	9¼	11	400	6	7500

American Boy.

BRUNS, KIMBALL & CO., NEW YORK CITY.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2	2	3	3	600	1	85

Barber.

BARBER BROTHERS, SYRACUSE, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
2-cylinder	40	2	8	8	350	2	1900

Beaver.

BEAVER MANUFACTURING COMPANY, MILWAUKEE, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
XL	28-30	4	4⅜	4⅜	1000	4	470
A	35-40	4	4¾	5¼	1000	4	550

Bevier.

BEVIER GAS ENGINE COMPANY, KALAMAZOO, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	20	4	7½	9		2	2500
	30	4	7½	9		3	3500
	40	4	7½	9		4	4500
	50	4	9½	11		3	5675
	75	4	9½	11		4	7300
	100	4	12¾	14		3	11300
	150	4	12¾	14		4	19300
	5	4	5½	6		1	500
	10	4	5½	6		2	800
	15	4	5½	6		3	1200
	20	4	5½	6		4	2000

Brennan.

BRENNAN MOTOR MFG. CO., 101 GRAPE ST., SYRACUSE, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
B	20-25	4	4½	5	600-800	4	400
B	30-35	4	5	5	650-800	4	550
12	30-40	4	5½	6	600-700	4	700
12	40-50	4	6	6	600-700	4	800
M	15-20	4	4	5	600-800	4	350
7 Special	15	4	5½	5	650	2	400
7 "	12	4	5	5	650	2	350
7 "	10	4	4 9/16	5	650	2	325
	75-100	4	7	7	500-600	6	2000

The Brown.

THE B. F. BROWN GAS ENGINE CO., SCHENECTADY, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A Type 1	1	2	2¾	2¼	1000	1	45
A " 2	2	2	2¾	2¼	1000	2	65
B " 3	3	2	3½	3½	1000	1	100
B " 4	6	2	3½	3½	1000	2	145
B " 5	10	2	3½	3½	1000	3	190
C " 6	5	2	4½	4½	900	1	180
C " 7	12-15	2	4½	4½	900	2	300
C " 8	20-25	2	4½	4½	900	3	500
C " 9	40-50	2	4½	4½	900	6	800
C Special	30-35	2	4½	4½	900	4	600
D Type R	7	2	5¼	4½	900	1	200
D " U	16-18	2	5¼	4½	900	2	335
D " X	30-35	2	5¼	4½	900	3	550
D Special	40-45	2	5¼	4½	900	4	650
D Type Y	60-70	2	5¼	4½	900	6	900

Bridgeport.

BRIDGEPORT MOTOR COMPANY, BRIDGEPORT, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
30	2½	2	3⅜	4	500	1	150
40	4	2	4½	5	500	1	200
50	5	2	5⅛	5	500	1	225
70	7	2	5½	6	500	1	420
90	9	2	6½	7	400	1	495
80	8	2	4½	5	500	2	375
100	10	2	5⅛	5	500	2	470
140	14	2	5½	6	500	2	700
180	18	2	6½	7	400	2	900
270	27	2	6½	7	400	3	1300
C	6-8	2	3⅜	4	500-700	2	250
D	10-12	2	4½	5	500-700	2	325
E	15-20	2	4½	5	600-800	3	425
J-40 Special	6	2	4½	5	600	1	180

Buffalo.

BUFFALO GASOLINE MOTOR COMPANY, BUFFALO, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
Regular	3	4	3	4	700	2	190
"	5	4	3½	5	600	2	300
"	7½	4	4½	5	600	2	450
"	10	4	3½	5	600	4	490
"	15	4	4½	5	600	4	740
"	65	4	8½	9	375	4	3150
"	100	4	8½	9	375	6	4500
Auto Marine	25	4	4¾	5	800	4	550
"	40	4	4¾	5	800	6	775
High Speed	90	4	6¼	6¼	900	6	1325
"	60	4	6¼	6¼	900	4	930
Heavy Duty	9	4	5	6½	350	2	800
"	12	4	6	7½	350	2	1100
"	18	4	7	9	350	2	1800
"	18	4	5	6½	350	4	
"	24	4	6	7½	350	4	1900
"	36	4	7	9	350	4	2900
"	54	4	7	9	350	6	4125
"	85	4	10	12	300	4	6000
"	125	4	10	12	300	6	9000

Barker.

C. L. BARKER, NORWALK, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
V	1½	2	3 5/16	3½	600	1	
V	2½	2	4⅛	4¼	550	1	
V	4	2	4 7/16	5	550	1	
V	6½	2	5½	6½	450	1	
V	10	2	6½	8	400	1	
V	5	2	4⅛	4¼	550	2	
V	8	2	4 7/16	5	550	2	
X	15	2	5¼	5½	600	2	
X	30	2	5¼	5½	600	4	

Belle Isle Motors.

CONCRETE FORM & ENGINE COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
1	2- 2½	2	3¼	2¾	600	1	136
2	4- 5	2	4⅛	4¼	600	1	160
3	5- 6	2	4½	5	500	1	200
4	8-10	2	4¾	3¼	600	2	250

Brown-Talbot.

BROWN-TALBOT MACHINERY COMPANY, SALEM, MASS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
	4	2	4	4	600	1	200
	7	2	5½	5	500	1	300
	10	2	7	6¼	400	1	500
	8	2	4	4	600	2	300
	14	2	5½	5	500	2	450
	20	2	7	6¼	400	2	850

Cady of Canastota.

THE C. N. CADY COMPANY, CANASTOTA, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
A	3	2	3⅜	3¼	700	1	90
B	4	2	4⅛	4	700	1	134
C	6	2	3⅜	3¼	700	2	140
D	8	2	4⅛	4	700	2	206
E	12	2	4⅛	4	700	3	275
F	20	2	5⅛	5	700	2	325
G	30	2	5⅛	5	700	3	425
H	40	2	5⅛	5	700	4	525

Caille Perfection.

THE CAILLE PERFECTION MOTOR CO., DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
1913	2	2	3	3½	100-800	1	100
"	2½	2	3½	3½	100-800	1	140
"	3½-4	2	3⅜	3½	100-800	1	150
"	6	2	4⅛	4½	100-700	1	200
"	8	2	5⅛	5	100-500	1	300
"	7-8	2	3¾	3½	100-800	2	220
"	8-unit power plant	2	3¾	3½	100-1000	2	260
"	12	2	3¾	3½	100-1000	3	300
"	14	2	4¾	4½	100-800	2	350
"	18-20	2	5½	5	100-600	2	550
"	30	2	4¾	4½	100-1000	4	600

The Capitol.

AUTO ENGINE WORKS, ST. PAUL, MINN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
14	3	4	4½	5½	675	1	145
5	10	4	4½	5½	675	2	360
6	20	4	4½	5½	675	4	500
7	14	4	5½	6	575	2	535
8	40	4	5½	6	800	4	675
11	60	4	6½	7	750	4	1490
12	100	4	6½	7	750	6	1753

Columbia Marine.

COLUMBIA ENGINE COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
	2	2	3	3½	50- 900	1	100
	3	2	3 11/16	3 9/16	50- 900	1	120
	4	2	3 11/16	3 9/16	50-1000	1	135
	5-6	2	4 11/16	4¼	50- 950	1	180
	7-8	2	4⅞	4 9/16	90-1000	1	200
Heavy Duty	8	2	5½	5	100- 500	1	300
	9-10	2	3½	3½	50-1000	2	250
	12	2	4½	4¾	50-1000	2	370
	15	2	4 11/16	4 9/16	50-1200	2	385
Speed	20	2	4⅞	4 9/16	100-2000	2	400
	20	2	5½	5	100- 600	2	375
	20-25	4	3¾	4½	100-1200	4	400
	40-50	4	5	4¾	50-1500	4	850

Carl Marine Engines.

CARL ENGINE WORKS, OFFICE 2831 MERVINE ST., PHILADELPHIA, PA.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
A	4	4	4½	5	450	1	200
B	9	4	4½	5	650	2	300
C	3	4	3	6	600	1	250
D	13	4	5	6	650	2	475
E	18	4	4½	5	750	4	500
S	20	4	5	6	700	4	700
H	6	4	7	8	500	1	300
J	14	4	7	8	550	2	450
H	30	4	7	8	700	4	900

Corliss.

CORLISS GAS ENGINE COMPANY, SAN FRANCISCO, CAL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
Heavy Duty	5	4	6	6½	400	1	900
"	10	4	6	6½	400	2	1400
"	15	4	6½	7½	360	2	2000
"	20	4	7¾	9	330	2	3000
"	30	4	9	10½	300	2	4200
"	50	4	10½	12	280	2	6250
"	65	4	12	14	260	2	8750
"	35	4	7¾	9	330	3	4000
"	50	4	9	10½	300	3	6000
"	80	4	10½	12	280	3	9600
"	100	4	12	14	260	3	12000
"	125	4	13½	15½	240	3	15000
"	150	4	14½	17	220	3	18000
"	25	4	6	6½	425	4	2100
"	35	4	6½	7½	375	4	2900
"	50	4	7¾	9	350	4	5000
"	75	4	9	10½	325	4	8000
"	110	4	10½	12	300	4	13000
"	140	4	12	14	280	4	15000
"	175	4	13½	15½	260	4	20000
"	200	4	14½	17	240	4	29000
"	45	4	6	6½	500	6	2750
"	80	4	6½	7½	450	6	4000
"	90	4	7¾	9	400	6	7000
"	125	4	9	10½	350	6	10000
"	175	4	10½	12	325	6	18000
"	250	4	12	14	300	6	24000
"	300	4	13½	15½	275	6	30000
"	350	4	14½	17	250	6	40000

Clifton.

THE CLIFTON MOTOR WORKS, CINCINNATI, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight With Reverse Gear.
10 h.p.	10	4	5	6	500	2	800
15 "	15	4	5	6	500	3	1000
14 "	14	4	6½	7	400	2	1100
20 "	20	4	5	6	500	4	1200
21 "	21	4	6½	7	400	3	1600
28 "	28	4	6½	7	400	4	1900
60 "	60	4	6½	7	600	6	3500
65 "	65	4	8½	11	400	3	5000
90 "	90	4	8½	11	400	4	6400

Clipper.

CLIPPER LAWN MOWER COMPANY, DIXON, ILL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
	2	2	3¼	4	400-800	1	165
	3	2	4⅛	4	400-800	1	240
	5	2	3¾	4	400-800	2	265
	8	2	4⅛	4	400-800	2	300

Craig.

JAMES CRAIG ENGINE & MACHINE WORKS, 807-841 GARFIELD AVENUE, JERSEY CITY, N. J.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight With Reverse Gear.
M-3	18	4	6	7	400	3	1600
M-4	25	4	6	7	400	4	2100
K-3	45	4	8¼	9	400	3	3400
K-4	60	4	8¼	9	400	4	4000
R-4	100	4	9	10	400	4	4500
R-6	150	4	9	10	400	6	5500
T-4	200	4	11	12	400	4	7000
T-6	300	4	11	12	400	6	10000
C-4	75	4	6½	7½	800	4	1500
C-6	110	4	6½	7½	800	6	2000

Canadian Beaver.

SHERMAN COOPER COMPANY, TORONTO, ONT.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
Type G, Gear Pump.	4½	2	4	4	700	1	135
Type H, Plunger.	6	2	4½	4½	650	1	190
Type K, High Speed.	8	2	5	5	600	1	220
	9	2	4	4	750-1100	2	*225-175
	12	2	4½	4½	750-1100	2	325-275
	16	2	5	5	700	2	375

* Aluminum.

Cragg.

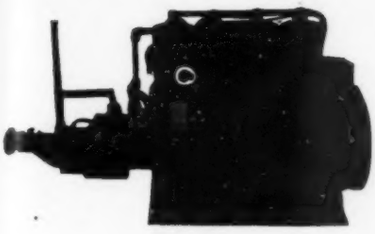
GILMORE CRAGG MOTOR MANUFACTURING COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
A	1½	2	3	2½	800	1	37
B	3½	2	3	2½	800	2	70
D	6	2	3½	3	600	2	120
E	8	2	4	4	600	2	135
F	10	2	4	5	600	2	150
G	22	2	4	5	600	4	305

De Mooy.

DE MOOY BROS., CLEVELAND, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cyl- inders.	Weight Without Reverse Gear.
2½	3-4	2	3½	3½	600-900	1	115
3½	6-8	2	4½	5	600-800	1	210
5½	7-10	2	5½	6	500-650	1	320
5	6-8	2	3½	3½	600-900	2	190
7	12-16	2	4½	5	600-800	2	360
11	14-20	2	5½	6	500-650	2	580
7½	9-12	2	3½	3½	600-900	3	255
10½	18-24	2	4½	5	600-800	3	510
16½	21-30	2	5½	6	500-650	3	840



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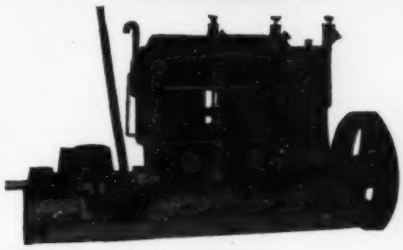

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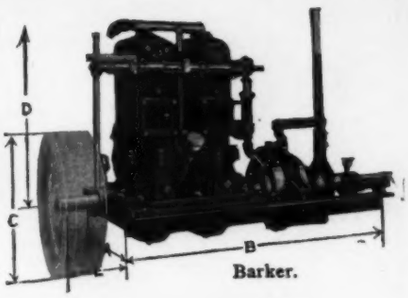

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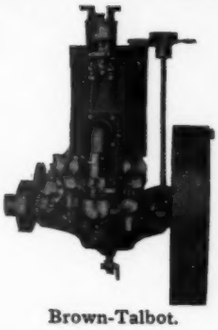

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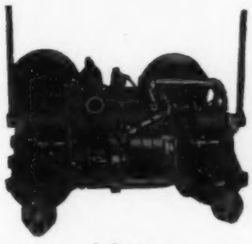

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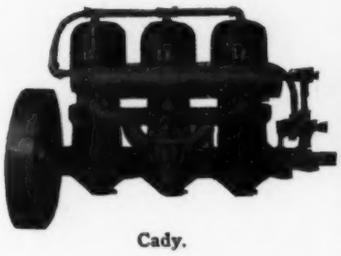

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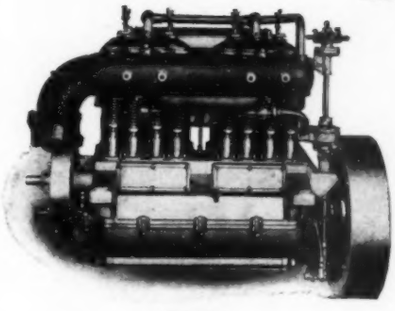

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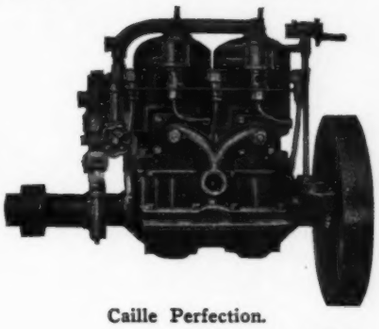

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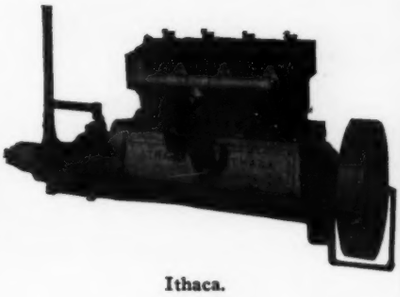

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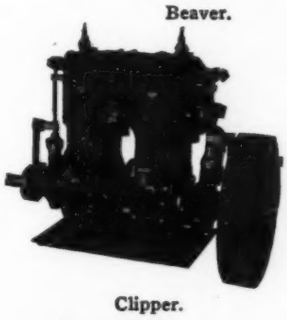

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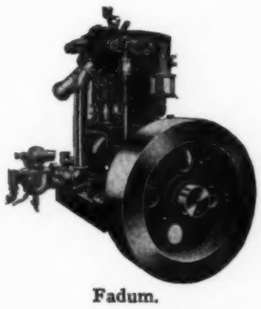

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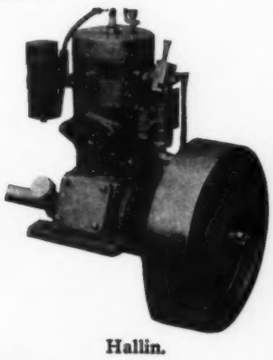

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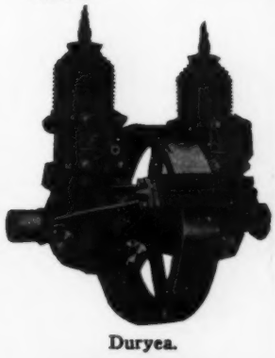

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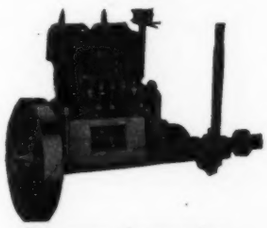

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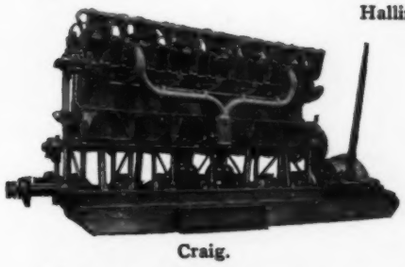

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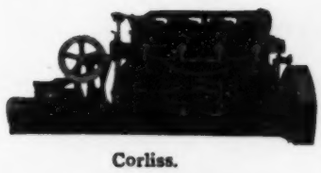

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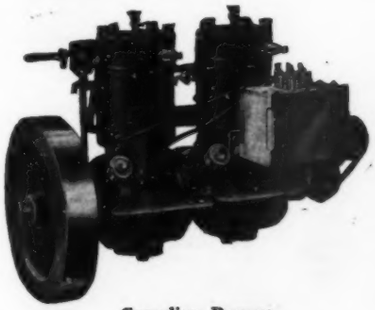
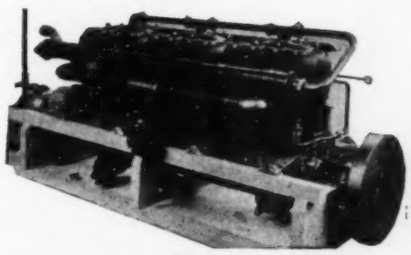


Canadian Beaver.



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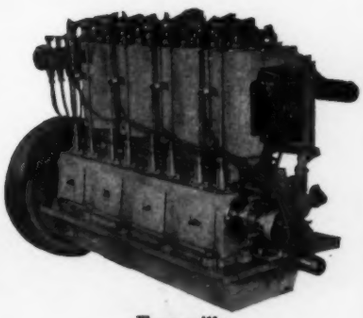


Evansville.

Dice.

ANDERSON MOTOR COMPANY, ANDERSON, IND.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
F	8-10	4	5	5	700-800	2	
E	12-15	4	5½	5	700-800	2	
B	25-30	4	5½	5	700-800	4	

De Long.

DE LONG ENGINE COMPANY, WEBSTER, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	2½	2	3	3½	750	1	65
B	5	2	3	3½	750	2	90
C	8-10	2	3	3⅛	850	3	150

Duryea.

DURYEA MOTOR COMPANY, SAGINAW, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Duryea	19	2	3¼	3¼	200-2000	2	135

Eagle.

THE STANDARD COMPANY, TORRINGTON, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
K	3	2	3⅜	3¼	800-1000	1	95
2-K	6	2	3⅜	3¼	800-1000	2	150
O	6	2	4½	4	600-800	1	160
2-O	12	2	4½	4	600-800	2	260
B	3½	2	3¾	4	650	1	212
2-B	7	2	3¾	4	650	2	300
3-B	11	2	3¾	4	650	3	404
4-B	15	2	3¾	4	650	4	483
2-C	12	2	4½	5	600	2	450
3-C	18	2	4½	5	600	3	611
4-C	25	2	4½	5	600	4	749
A	1½	2	3	3	650	1	95
F	2½	2	3¾	4	575	1	160
R	5-6½	2	4½	5	500-600	1	250
D	5½	2	5	6	450	1	340
2-D	12	2	5	6	450	2	555
E	7	2	6	6½	400	1	490
2-E	15	2	6	6½	400	2	780
T	4	2	5	6	600	1	600

Elbridge.

ELBRIDGE ENGINE CO., 20 CULVER RD., ROCHESTER, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Special:							
A	3-5	2	3¼	3½	1000	1	85
A-2	6-10	2	3¾	3½	1000	2	120
A-3	9-15	2	3¾	3½	1000	3	172
A-4	12-20	2	3¾	3½	1000	4	220
B-1	6	2	4½	4½	600	1	175
B-2	12	2	4½	4½	600	2	280
B-3	18	2	4½	4½	600	3	390
Fea'wts.:							
F-2	20	2	4⅜	4½	1200	2	160
F-3	30	2	4⅜	4½	1200	3	225
F-4	40	2	4⅜	4½	1200	4	275
F-6	60	2	4⅜	4½	1200	6	350

Essex.

ESSEX ENGINE COMPANY, LYNN, MASS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Standard	2½	2	3¾	4¼	500	1	175
"	4½	2	4½	5¾	500	1	267
"	6	2	5	6	450	1	365
"	8	2	6	6	450	1	420
"	9	2	4½	5½	500	2	460
"	12	2	5	6	450	2	640
"	16	2	6	6	400	2	760

Evansville.

EVANSVILLE GAS ENGINE WORKS, EVANSVILLE, IND.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	3½	4	4½	5	500	1	250
	7½	4	4½	5	500	2	350
	15	4	4½	5	500	4	575
	22½	4	4½	5	500	6	
	5	4	5	6	500	1	350
	10	4	5	6	500	2	475
	15	4	5	6	500	3	650
	20	4	5	6	500	4	825
	30	4	5	6	500	6	1150
	8	4	6	6¼	500	1	575
	16	4	6	6¼	500	2	825
	24	4	6	6¼	500	3	1175
	32	4	6	6¼	500	4	1425

Erd.

ERD MOTOR COMPANY, SAGINAW, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Erd Standard Type.	3½	2	3½	3½	850	1	90
	5	2	4	4	800	1	145
	7	2	3½	3½	850	2	160
	10	2	4	4	800	2	240
	12	2	3½	3½	850	3	225
	15	2	4	4	800	3	335
	20	2	4	4	800	4	430
Erd Feather-weight Type.	18	2	4½	4½	1100	2	200
	30	2	4½	4½	1200	3	250
	40	2	4½	4½	1200	4	310
	60	2	4½	4½	1200	6	395
Erd Medium Duty Four Cycles.	12	4	5	6	500	2	610
	18	4	5	6	500	3	830
	24	4	5	6	425	4	1027
	40	4	6¼	7½	425	4	2100

Evinrude.

EVINRUDE MOTOR CO., WALKER ST., MILWAUKEE, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight
B	2	2	2½	2½	200-1000	1	50

Elco.

ELECTRIC LAUNCH COMPANY, BAYONNE, N. J.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
40 Elco	40	4	5	4¾	1000	4	475
60 "	60	4	5	4¾	1000	6	650
150 "	150	4	7	6½	1000	6	2200

Ellsworth.

ELLSWORTH FOUNDRY & MACHINE WORKS, ELLSWORTH, MAINE.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Ellsworth	2½	2	4	4	500	1	250
"	3½	2	4½	4½	500	1	325
"	4½	2	4⅝	4⅝	500	1	375
"	5½	2	5¼	5¼	450	1	475
"	7½	2	6	6½	450	1	575
"	5	2	4	4	600	2	
"	10	2	4½	4½	600	2	
"	12	2	5¼	5¼	600	2	
"	6	4	6	7	450	1	800
"	12	4	6	7	450	2	
"	18	4	6	7	450	3	
"	24	4	6	7	450	4	
"	36	4	6	7	450	6	
"	54	4	8	10	400	3	
"	72	4	8	10	400	4	
"	110	4	8	10	400	6	

Ferro.

THE FERRO MACHINE & FOUNDRY CO., CLEVELAND, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
T	3	2	3⅜	3¼	700-900	1	115
O	4	2	3¾	3½	600-800	1	152
F	5½	2	4¼	4¼	600-800	1	210
K	7½	2	5	5	550-800	1	247
DT	6	2	3⅜	3½	700-900	2	148
P	8	2	3¾	3½	600-800	2	191
G	11	2	4¼	4¼	600-800	2	295
L	15	2	5	5	700-900	2	367
R	12	2	3¾	3½	600-800	3	276
H	17	2	4¼	4¼	600-800	3	371
M	25	2	5	5	700-900	3	490

Fraser.

FRASER MACHINE MOTOR COMPANY, NEW GLASGOW, N. S.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Special	3	2	3½	3	1000	1	75
"	4	2	3⅞	4	800	1	175
"	6	2	4½	5	575	1	240
"	9	2	5½	6½	575	1	350
Regular	4	2	3⅞	4	800	1	175
"	6	2	4½	5	575	1	240
"	8	2	3⅞	4	800	2	240
"	9	2	5½	6½	575	1	350
"	12	2	4½	5	575	2	700
"	12	2	3⅞	4	800	3	425
"	18	2	5½	6½	575	2	700
"	18	2	4½	5	575	3	625
"	27	2	5½	6½	575	3	900

Fox (Marine)—Dean (Stationary).

THE DEAN MANUFACTURING COMPANY, NEWPORT, KY.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Medium	7	2	4½	4	750	single	150
"	8	2	3½	3½	850	double	175
"	10	2	5	5	700	single	210
"	14	2	4½	4	750	double	240
"	20	2	5	5	700	double	325
"	21	2	4½	4	750	triple	330
"	30	2	5	5	700	triple	430
Special	3½	2	3½	3½	800	single	100
"	7	2	3½	3½	800	double	175
Heavy	5-7	2	4½	5	450-700	single	300
"	10-14	2	4½	5	450-700	double	440
"	9-12	2	5½	6	450-700	single	550
"	18-24	2	5½	6	450-700	double	825

Fadum.

FREDERICK FADUM & SON, BALTIMORE, MD.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	4-5	4	4½	5	150-600	1	
	6-7	4	5½	6	150-600	1	
	8-10	4	4½	5	150-600	2	
	12-15	4	5½	6	150-600	2	
	12-15	4	4½	5	150-600	3	
	16-20	4	4½	5	125-600	4	
	18-21	4	5½	6	150-600	3	
	25-30	4	5½	6	125-600	4	

Fisherman.

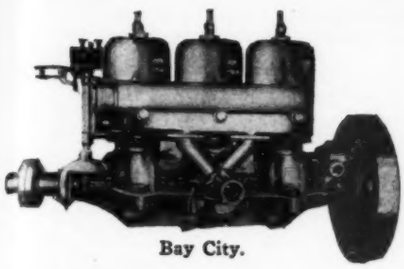
LOAN-HILTZ ENGINE COMPANY, BALTIMORE, MD.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	6	4	5	6	500	1	400
Reversible B	6	4	5	6	500	1	400
B-2	13	4	5	6	500	2	750

Fairbanks-Morse.

FAIRBANKS, MORSE & CO., CHICAGO, ILL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
E	3½	2	3¾	3¾	800	1	149
EE	7	2	3¾	3¾	800	2	203
EG	6	2	4½	4½	800	1	235
EG	12	2	4½	4½	800	2	357
EGG	18	2	4½	4½	800	3	485
EGK	24	2	4½	4½	800	4	652
K	7½	2	5½	6	550	1	400
K	15	2	5½	6	550	2	600



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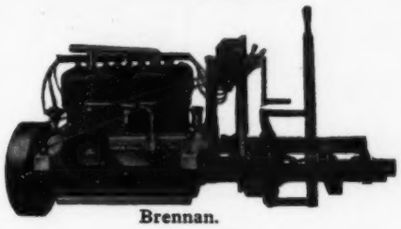

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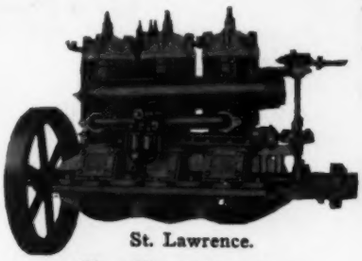

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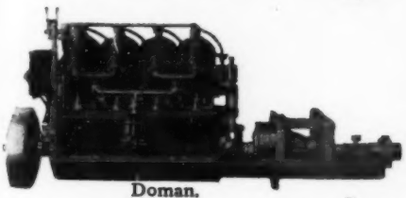

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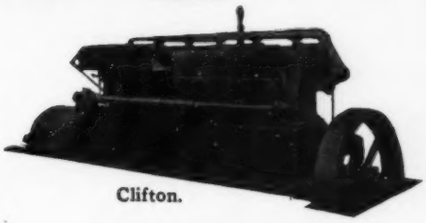

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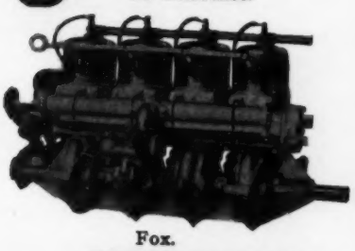

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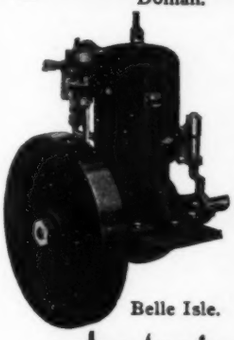
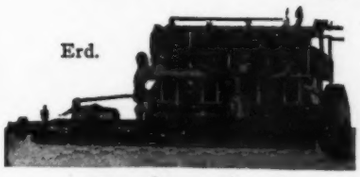


Belle Isle.

Essex.



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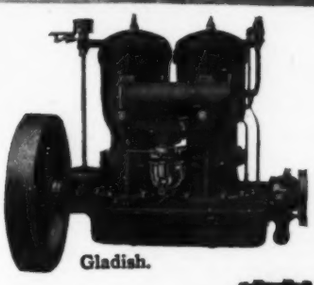

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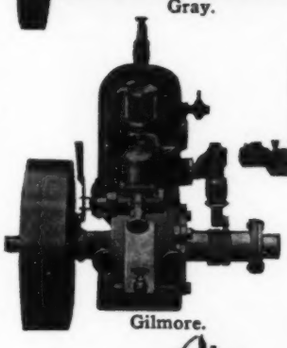

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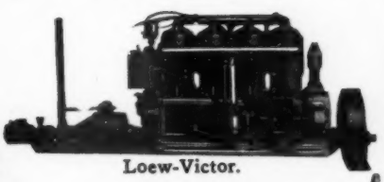

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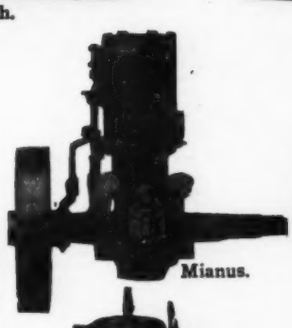

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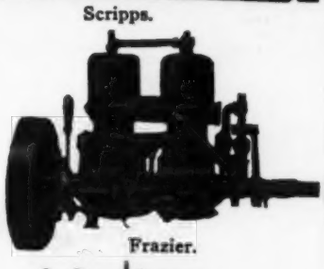

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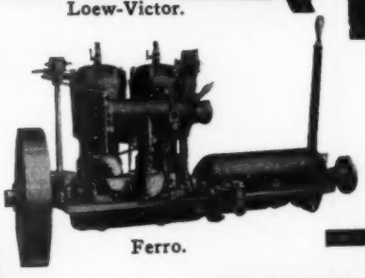

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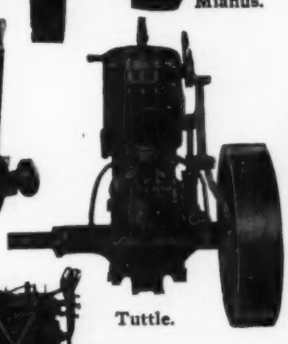

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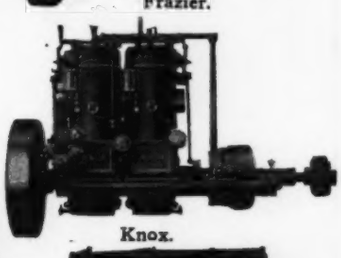
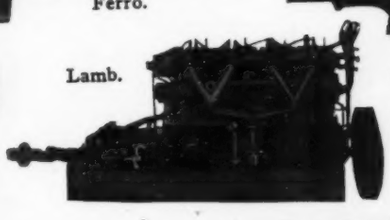


Knox.

Michigan Steel.



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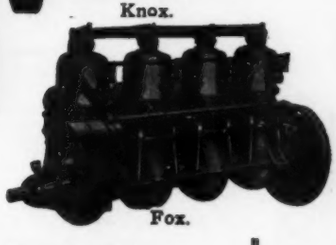

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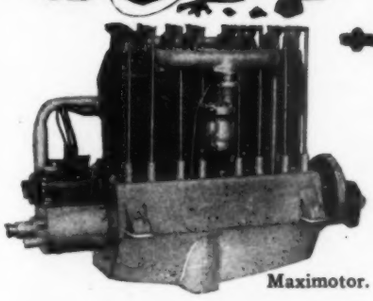

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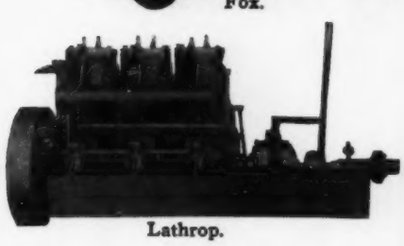


Lathrop.

Fay & Bowen.

FAY & BOWEN ENGINE COMPANY, GENEVA, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
L-64	45-65	4	5	6¼	700-1000	6	1050
L-63	30-50	4	4½	5½	600-1000	6	875
L-44	30-45	4	5	6¼	700-1000	4	800
L-43	20-35	4	4½	5½	600-1000	4	680
L-41	12-18	4	3½	5	700-1000	4	540
34	32	2	6¼	6¼	500	3	2100
24	20	2	6¼	6¼	475	2	*1135
23	15	2	5½	5½	500	2	*840
22	10	2	4½	4½	550	2	*470
2	5	2	4½	4½	550	1	*290
1	2½	2	3½	3¼	700	1	*200

* Weight without reverse gear.

Frazer-Adams.

FRAZER BROS. COMPANY, ADAMS, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2	2	3 1/16	3	900	1	90
	4	2	3 1/16	3	900	2	140
	6	2	3 1/16	3	900	3	185
	4	2	3¾	3½	900	1	150
	8	2	3¾	3½	900	2	200
	12	2	3¾	3½	900	3	285

Frisbie.

FRISBIE MOTOR COMPANY, MIDDLETOWN, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	5	4	4¾	5	550	1	325
C	7	4	6	6	450	1	500
B	10	4	4¾	5	550	2	430
D	14	4	6	6	450	2	700
M	16	4	4	4½	600	4	500
E	25	4	4¾	5	600	4	725
F	40	4	6	6	600	4	1200
K	35-50	4	4¾	5	600-800	6	985
L	50-75	4	6	6	600-800	6	1600

Fulton.

FULTON MANUFACTURING COMPANY, ERIE, PA.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Y	3½	2	3½	4	650	1	160
R	5	2	4½	5	600	1	285
O	7½	2	5½	6	500	1	300
N	7	2	3¾	4	650	2	265
S	10	2	4½	5	600	2	400
P	15	2	5½	6	500	2	525

Gilmore.

GILMORE MOTOR MFG. COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	1½	2	3	2½	800	1	37
	3½	2	3	2½	800	2	67
	5½	2	3	2½	800	3	97
	8	2	3	2½	800	4	134
	5	4	3	3½	750	2	133
	10	4	3	3½	750	4	225
	5	4	4½	5	650	1	163
	10	4	4½	5	650	2	250
	15	4	4½	5	650	3	338
	20	4	4½	5	650	4	425
	30	4	4½	5	650	6	625
	50	4	4½	5	650	8	850

Grimm.

GRIMM MANUFACTURING CO., 39 ERIE ST., BUFFALO, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	6-8	4	3¼	4½	800-1200	2	200
	12-16	4	3¾	4½	800-1200	4	350
	18-25	4	3¾	4½	800-1200	6	500

Gladish.

GLADISH BROS. MACHINE WORKS, CHATTANOOGA, TENN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Gladish	7	2	4¾	5	600	1	350
"	14	2	4¾	5	600	2	500
"	21	2	4¾	5	600	3	675
"	28	2	4¾	5	600	4	900

Grasser.

GRASSER MOTOR COMPANY, TOLEDO, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2-2½	2	3 1/16	3 1/16	700-900	1	80
	5-7	2	4¾	4¾	600-800	1	220
	7½-10	2	5	5	600-800	1	320
	10-15	2	6	6	500-700	1	400

Gray.

GRAY MOTOR COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
U	3	2	3½	3½	700-1000	1	80
U	6	2	3½	3½	700-1000	2	138
R	3½	2	4	3	600-800	1	125
R	4½	2	4	4	600-800	1	190
R	6	2	4¾	4	600-800	1	225
R	12	2	4¾	4	600-900	2	345
T	7	2	4¾	4	600-900	1	205
T	8	2	4¾	5	550-700	1	328
T	12	2	5¼	5	550-800	1	340
T	14	2	4¾	4	600-950	2	372
T	16	2	4¾	5	550-800	2	600
T	21	2	4¾	4	600-1100	3	390
T	24	2	5¼	5	550-800	2	630
T	36	2	5¼	5	550-1000	3	765

Globe 4-Cycle—Eddystone-Globe 2-Cycle.

PENNSYLVANIA IRON WORKS COMPANY, EDDYSTONE, PA.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
Globe:							
E	16	4	7	9	360	2	2075
F	25	4	8¼	10	350	2	2955
G	35	4	7	10	320	4	4360
H	50	4	8¼	10	320	4	6500
J	90	4	10	14	280	4	14000
K	110	4	11	14	280	4	14500
S	20	4	7½	9	350	2	3250
S	30	4	7½	9	335	3	4425
S	40	4	7½	9	325	4	5300
T	60	4	10	10	320	3	5600
T	80	4	10	10	320	4	9350
Eddystone-Globe:							
Z	6-8	2	5½	5	550-650	1	*400
Z	12-16	2	5½	5	550-650	2	*600
Z	18-24	2	5½	5	550-650	3	*800
Z	24-32	2	5½	5	550-650	4	*1000
Z	36-48	2	5½	5	550-650	6	*1600

* Without reverse gear.

Guarantee.

GUARANTEE MOTOR COMPANY, HAMILTON, ONT.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Medium	3	2	3½	3½		1	135
"	4-6	2	4½	4½		1	200
Heavy	6-7½	2	5	5		1	325
"	8-10	2	5½	5		1	425
*Medium	4	4	4½	4½		1	300
*Heavy	6	4	5½	5		1	450
* "	8	4	6	7		1	550
Medium	6	2	3½	3½		2	225
"	8-12	2	4½	4½		2	425
Heavy	12-15	2	5	5		2	550
"	16-20	2	5½	5		2	650
Medium	8	4	4½	4½		2	450
Heavy	12	4	5½	5		2	700
"	16	4	6	7		2	900

* Kerosene fuel as well as gasoline. Jump spark.

Hallin.

HALLIN GAS ENGINE & BOAT COMPANY, TACOMA, WASH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	4	2	4¾	4½	550	1	200
	7	2	5¼	6	500	1	250
	10	2	6¼	7	430	1	325
	12	2	6¼	7	400	1	600
	8	2	4½	4¾	500	2	500
	10	2	5¼	3¼	450	2	600
	5	4	5½	7	400	1	500
	7	4	6½	7	400	1	800
	10	4	5½	7	400	2	800
	15	4	5½	7	400	3	1200
	20	4	5½	7	400	4	1550
	14	4	6½	7	400	2	1500
	28	4	6½	7	400	4	2800

Harris.

DELAWARE MACHINE WORKS, WILMINGTON, DEL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
P	5-6	4	5½	6¼	500	1	
A	7-8	4	6	7	500	1	
R	8-10	4	5	5½	500	2	
O	10-12	4	5½	6¼	500	2	
U	14-16	4	6	7	500	2	
S	18-22	4	6½	8¼	450	2	
Q	25-32	4	8	10	400	2	
O	20-25	4	5½	6¼	600	4	
T	20-25	4	6	7	600	4	
U	30-35	4	6	7	500	4	
S	40-50	4	6½	8¼	500	4	
Q	50-65	4	8	10	375	4	
Y	60-75	4	6½	8¼	500	6	
V	60-75	4	9½	11	350	4	
H	100-125	4	11	14	300	4	
H	125-150	4	11	15	300	4	

Heer Two Cylinder Opposed.

THE HEER ENGINE COMPANY, PORTSMOUTH, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
EE	10	4	5	5	600	2	675
GG	16	4	6	6	550	2	1200
JJ	25	4	7	7	450	2	1850
MM	40	4	9	10	350	2	3500

Hines.

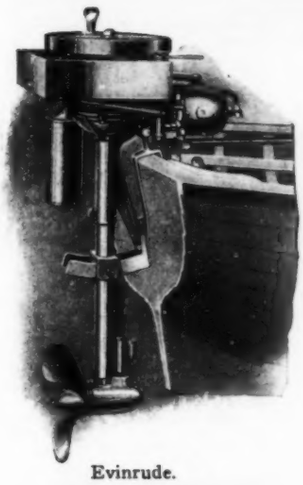
H. E. HINES MOTOR COMPANY, TRAVERSE CITY, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
(C)	12	4	5 5/16	6½	500	2	800
C	24	4	5 5/16	6½	500	4	1400
D	24	4	7½	8½	375	2	2500
D	30	4	7½	8½	375	4	4000
D	36	4	7½	8½	375	3	3400

Holliday.

HOLLIDAY ENGINEERING COMPANY, CHICAGO, ILL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2½	4	3½	5		1	
	3	4	5	6		1	
	5	4	3¼	5		2	
	7	4	3¾	7		1	
	7½	4	6	7		1	
	10	4	5	6		2	
	15	4	6	7		2	
	20	4	5	6		4	
	30	4	6	7		4	
	40	4	7	9		4	



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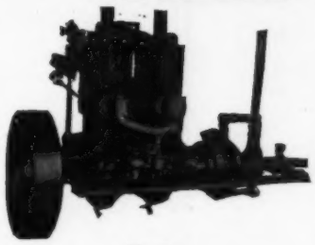

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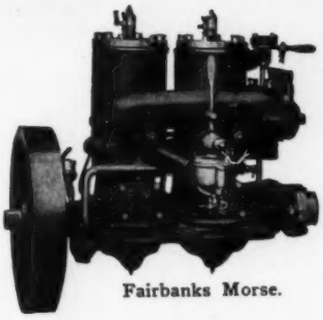

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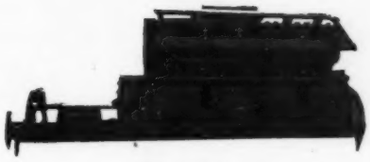

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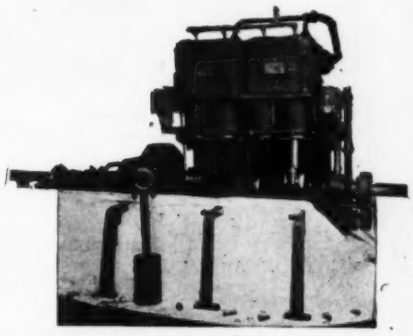
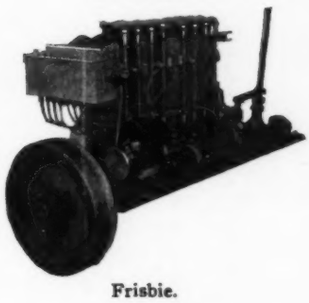


Holmes (showing accessibility).

Fay & Bowen.



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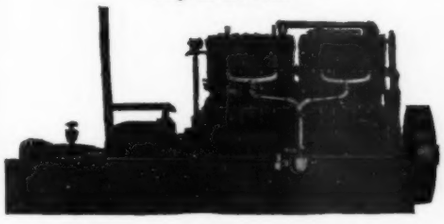

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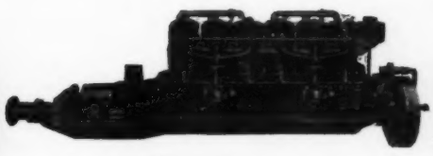

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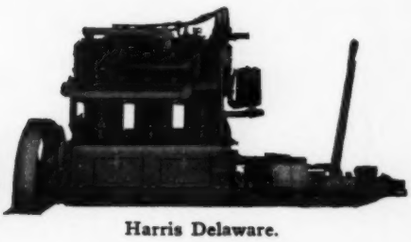

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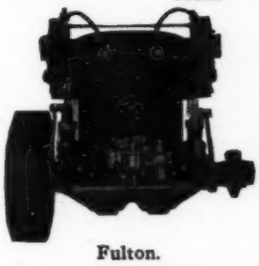

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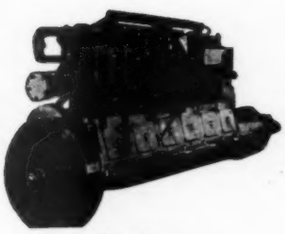

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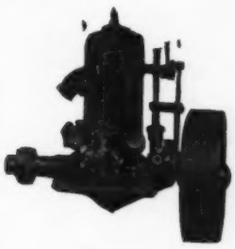
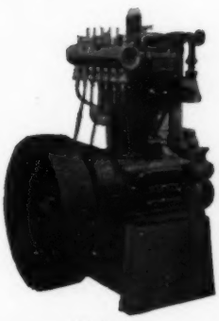


Grasser.

Kennebec.

Hettinger.



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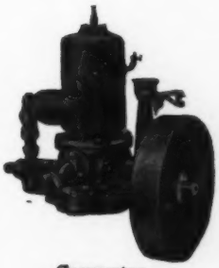

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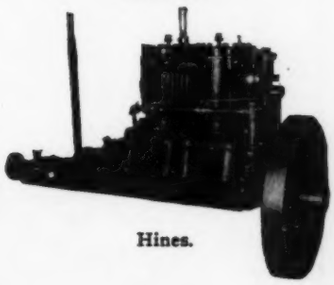

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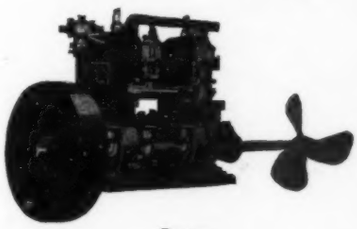

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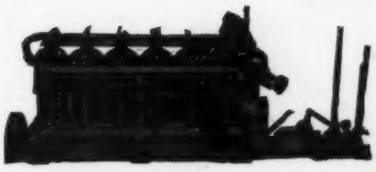


Jencick.

Holmes.

THE HOLMES MOTOR COMPANY, WEST MYSTIC, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
B	25	4	4½	6¾	700	4	850
*K	40	4	4½	6¾	700	6	1250
G	45	4	6	9	500	4	2000
H	70	4	6	9	500	6	2800
I	90	4	6	9	500	8	3500

* Lifeboat Special.

Hettinger.

HETTINGER ENGINE COMPANY, BRIDGETON, N. J.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	6	4	5½	6	500	1	390
	9	4	4½	6	500	2	490
	12	4	5½	6	500	2	600
	18	4	6½	8	400	2	1500
	36	4	6½	8	400	4	3000
	60	4	8½	10	375	4	4500
Special	18	4	4½	6	700	4	620

Cylinders cast separately, except 18 h.p., 4-cylinder, which is cast in pairs. Ignition either make and break or jump spark. Lubrication, mechanical oiler or gravity feed on small sizes. Motors over 18 h.p. fitted regularly with force feed system. Float feed carbureter.

Heinel.

H. A. HEINEL COMPANY, WILMINGTON, DEL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	5	4	5	5	500	1	
B	10	4	5	5	500	2	

Imperial.

BRUCE STEWART & CO., LTD., CHARLOTTETOWN, P. E. I., CANADA.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
B	3	2	3½	3	900	1	98
M	4	2	4	3½	600	1	170
A	5	2	4½	4	600	1	230
2-A	10	2	4½	4	600	2	320
3-A	15	2	4½	4	600	3	400
4-A	20	2	4½	4	600	4	550
L	24-30	4	5	6	600	4	1025

The Ideal.

V. J. EMERY, WOLLASTON, MASS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
	4	4	3¾	4¾	600	2	325
	8	4	5	6	500	2	600
	12	4	5¾	7	400	2	1000
	16	4	5	6	400	4	1250
	25	4	5¾	7	400	4	1700
	40	4	7	8	400	4	2400
	60	4	7	8	400	6	3500

Ithaca.

CHAMPAIGN BROS., ITHACA, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1-1½ h.p.	1½	2	3	3	650	1	50
2 "	2	2	3½	3½	650	1	100
3 "	3	2	4⅛	4⅛	550	1	175
5 "	5	2	3½	3½	700	2	150
7 "	7	2	4⅛	4⅛	500-600	2	290
10 "	10	2	4⅛	4⅛	600	3	425
15 "	15	2	5½	5½	500	3	650
10 "	10	2	3½	3½	700	4	250
12 "	12	2	4⅛	4⅛	500	4	525
25 "	25	2	5½	5½	700	4	850
25 "	25	4	4½	5½	800	4	600

Jencick.

JENCICK MOTOR CORP., PORTCHESTER, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
HM	25	4	3½	5¼	1000	4	480
JM	35	4	4½	6	1000	4	690
KM	45	4	5	6¾	950	4	980
F	55	4	6¼	7	900	4	1250
D	90	4	7½	7½	875	4	1575
HM	35	4	3½	5¼	1000	6	510
JM	50	4	4½	6	1000	6	900
KM	60	4	5	6¾	950	6	1175
F	80	4	6¼	7	900	6	1600
D	95	4	7½	7½	875	6	2350
D	200	4	7½	7½	875	8	2900
G	300	4	7¾	9	750	12	4500

Johnson.

A. J. JOHNSON MACHINE WORKS, EAU CLAIRE, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1-A	2½	2	3½	3½	800	1	90
2-A	6	2	3½	3½	800	2	130
2-B	5	2	4½	4¼	700	1	125
3-B	10	2	4½	4¼	700	2	190

Kemaco.

THE KENT-MARVIN COMPANY, BELLINGHAM, WASH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
B	30	4	8	10	300	2	5400
C	60	4	8	10	300	4	7200
D	90	4	8	10	300	6	10000

Knox.

CAMDEN ANCHOR-ROCKLAND MACHINE COMPANY, CAMDEN, MAINE.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Knox	3	2	4	4	600	1	205
	4½	2	4¼	4½	550	1	250
	5½	2	5	5¼	550	1	330
	7½	2	5½	6¼	500	1	500
	9	2	4¾	4½	600	2	380
	11	2	5	5¼	550	2	480
	15	2	5½	6¼	500	2	760
	16	2	5	5¼	525	3	*750
	22	2	5½	6¼	500	3	*1200
	20	4	7	8	450	2	*1900
	40	4	7	8	450	4	*3200

* With reverse gear.

Kirkham

KIRKHAM MOTOR MFG. COMPANY, BATH, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
4-24	18-20	4	3¾	3¾	1200	4	
4-30	25-30	4	4	4½	1200	4	
4-40	35-40	4	4⅜	5½	1200	4	
0-4	37-42	4	4¼	5½	1200	4	
6-50	45-50	4	4½	5½	1200	6	
6-60	50-60	4	4⅜	5¾	1200	6	

Kennebec.

TORREY ROLLER BUSHING WORKS, COMMERCIAL ST., BATH, MAINE.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2	2	3½	4	600	1	132
	3	2	4½	4½	500	1	226
	5	2	5	6	500	1	297
	8	2	6¼	7	400	1	610
	4	2	3½	4	650	2	210
	6	2	4½	4½	500	2	305
	10	2	5	6	500	2	425
	16	2	6¼	7	400	2	1000
	6	2	3¾	4	600	3	286
	10	2	4½	4½	550	3	445
	15	2	5	6	615	3	615

K & D

SENECA FALLS ENGINE & SUPPLY CO., SENECA FALLS, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
K. & D.	2	2	3	3	650	1	175
"	5	2	4½	4	600	1	225
"	10	2	4½	4	600	2	350
"	15	2	4½	4	600	3	480

Kuhner.

KUHNER ENGINE COMPANY, OXFORD, MD.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	4¾	2	4	5	700	1	190
	6-7	2	5	5	600	1	325
	10	2	4	5	750	2	300
	15	2	5	5	750	2	500
	24	2	5	5	800	3	675
	8	4	4½	5	600	2	400
	15	4	5	6	700	2	500
	20	4	4½	5	750	4	700
	30	4	5	6	700	4	800
	50	4	5	6	800	6	1100
	75	4	5	6	1200	6	900

Kuhnert Duplex Opposed.

L. C. KUHNERT, JR., COMPANY, CHICAGO, ILL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Kuhnert	8	4	4½	4	800	2	300
"	14	4	5⅜	4½	800	2	380

L-A.

LOCKWOOD ASH MOTOR COMPANY, 102 HORTON ST., JACKSON, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	1½	2	3	3	700	1	70
	2½	2	3¼	3½	700	1	100
	4	2	4	4	700	1	130
	6	2	3½	3½	700	2	160
	8	2	4	4	700	2	225
	12	2	4½	4½	700	2	330
	7½	2	3½	3½	700	3	230
	18	2	4½	4½	700	3	475
	25	2	4½	4½	700	4	570

The La Salle.

TRUSCOTT BOAT & AUTO SUPPLY CO., ST. JOSEPH, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	15	4	3½	4	900	4	390

Lacy.

THE CLEVELAND ICE MACHINERY & MANUFACTURING CO., LORAIN, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2	2	3½	3½	600	1	110
	4	2	4½	4½	500	1	225
	6	2	5½	5½	450	1	375
	8	2	4½	4½	500	2	400
	12	2	5½	5½	450	2	675
	15	4	5	5	600	3	1050
	20	4	5	5	600	4	1450

Loew Victor.

LOEW MANUFACTURING COMPANY, CLEVELAND, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
10	6	4	4¾	5½	600	1	350
11	12	4	4¾	5½	600	2	530
12	18	4	4¾	5½	600	3	840
5	30	4	4¾	5	900	4 en bloc	600
13	25-40	4	4¾	5½	600	4	1050-750
14	36-60	4	4¾	5½	600	6	1500-900

Leighton.

H. J. LEIGHTON, SYRACUSE, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
40-50	2	5	4½	1000-1200	4		320

Lathrop.

J. W. LATHROP COMPANY, MYSTIC, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	3	2	4	4	500	1	150
	4	2	4½	5	500	1	200
	5	2	5 5/16	5	500	1	300
6 Light		2	5½	5	500	1	325
6 Stand.		2	5¼	6½	400	1	400
	7	2	6	6½	375	1	575
	8	2	6½	6½	350	1	600
	10	2	7	7½	300	1	850
	12	2	7½	7½	275	1	900
	8	2	4½	5	550	2	460
	10	2	5 5/16	5	500	2	475
12 Light		2	5½	5	500	2	500
12 Stand.		2	5¼	6½	450	2	850
	14	2	6	6½	425	2	900
	16	2	6½	6½	400	2	950
	20	2	7	7½	300	2	1200
	24	2	7½	7½	275	2	1300
	18	2	5½	5½	500	3	850
	24	2	6½	6½	450	3	1500
	36	2	7½	7½	275	3	2500

Lisk Marine Engine.

GEO. A. LISK, MANUFACTURER, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	5	4	4⅜	5	500	1	150
A	10	4	4⅜	5	600	2	350
A	15	4	4⅜	5	700	3	450
A	20	4	4⅜	5	700	4	600
A	30-35	4	4⅜	5	700	6	750
B	12-15	4	3¾	4	800	4	300
C	35	4	6	7	500	4	800
C	50	4	6	7	500	6	1000

Lamb.

LAMB ENGINE COMPANY, 30 CHURCH ST., NEW YORK CITY.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Long Stroke	10	4	4½	6¼	350	2	700
R	12	4	5⅛	6	500	2	750
R	18	4	5⅛	6	500	3	1000
R	24	4	5⅛	6	500	4	1050
R	40	4	5⅛	6	550	6	1400
H	20	4	6¼	7	450	2	1000
H	30	4	6¼	7	450	3	1400
H	40	4	6¼	7	450	4	1900
H	60	4	6¼	7	500	6	2600
Special	35-40	4	5⅛	6	800	4	800
"	65-70	4	5¼	6	800	6	1000

Mercury.

MERCURY MOTOR COMPANY, NEW YORK CITY.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	6	4	4½	5	800	1	145
	14-16	4	4½	5	800	2	294
	25-30	4	4½	5	800	4	652
	40-45	4	5	5	800	4	640
	52	4	5¼	5	1100	4	563
	60-65	4	6½	6½	800	4	850
	90-100	4	6¼	6½	1000	6	1045
	80-90	New Cycle	5	5	1000	6	475
	175	"	7½	7	1000	4	770

Midland.

MIDLAND ENGINE WORKS, MIDLAND, ONT.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	1½		3	2½	800	1	60
	3		4	4	600	1	150
	4		5	5	600	1	250
	6		5¼	5½	600	1	425
	6		4	4	600-800	2	255
	8		5	5	600-800	2	450
	12		5¼	5½	600-700	2	800
	9		4	4	600-800	3	350
	12		5	5	600-800	3	765
	18		5¼	5½	600-700	3	950

Mietz & Weiss Marine Oil Engines.

MERTZ & WEISS, NEW YORK CITY.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2		3	3	1000	1	200
	3½		4	4½	700	1	380
	5		4½	4½	500	1	650
	6		6	6½	460	1	1180
	7		4	4½	700	2	875
	10		4½	6½	500	2	1250
	15		6	6½	500	2	1850
	22		6	6½	500	3	2400
	30		6	6½	500	4	3000
	30		8	8	450	2	3050
	45		8	8	450	3	4300
	60		8	8	450	4	5580
	50		10	12	340	2	7000
	75		10	12	340	3	As Per Foundation Draw'g
	100		10	12	340	4	
	150		14	18½	240	3	
	200		14	18½	240	4	
	300		18	27	180	3	
	400		18	27	180	4	

Majestic.

MILWAUKEE AUTO ENGINE & SUPPLY COMPANY, MILWAUKEE, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1	4	4	4½	5	500	1	300
2	8	4	4½	5	500	2	475
3	18	4	4½	5	550	4	625
4	38	4	4½	5	500	8	1100
5	45	4	5⅜	6	600	6	900

Missouri.

H. LIPPERT, ST. LOUIS, MO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	3½	4	4	5	500-600	1	130
	4	4	4⅜	5	500-600	1	175
	6	4	4	5	500-600	2	200
	8	4	4⅜	5	500-600	2	250
	12	4	5	6	500-600	2	560
	18	4	4⅜	5	500-600	4	700
	24	4	5	6	500-600	4	900
	36	4	5	6	500-600	6	1400
	60	4	6	8	400-500	6	3000

Mianus.

THE MIANUS MOTOR WORKS, STAMFORD, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	3	2	4	4	550	1	175
A	5	2	4⅜	5	500	1	280
A	7½	2	5 5/16	6	450	1	415
A	10	2	6½	7	375	1	675
A-2	6	2	4	4	550	2	300
A-2	10	2	4⅜	5	500	2	500
A-2	15	2	5 5/16	6	450	2	750
A-2	20	2	6½	7	375	2	1170
X-1	30	2	6½	7	375	3	2000
X-1	40	2	6½	7	375	4	2765
Miamotor	6	2	4⅜	5	700	1	270
"	12	2	4⅜	5	700	2	285

Mohawk.

S. R. MANUFACTURING COMPANY, SCHENECTADY, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1	3½	2	3½	3¾	800	1	135
2	5	2	4⅛	3¾	800	1	155
3	7	2	4½	4½	700	1	225
4	7	2	3½	3¾	800	2	185
5	10	2	4⅛	3¾	800	2	220
6	14	2	4½	4½	700	2	335
7	15	2	4⅛	3¾	800	3	290
8	21	2	4½	4½	700	3	485
7-A	30	2	4⅛	3¾	800	4	325
Special	60	2	4½	4½	800	6	685
			HEAVY DUTY.				
9	5	2	4½	4½	500	1	275
10	10	2	4½	4½	500	2	410
11	15	2	4½	4½	500	3	545

Monarch.

GRAND RAPIDS GAS ENGINE & YACHT COMPANY, GRAND RAPIDS, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Gage	5-7	4	5	6	525-725	1	545
Gate	10-15	4	5	6	525-725	2	1000
Game	15-20	4	5	6	525-725	3	1240
Gay	20-30	4	5	6	525-725	4	1550
Gaze	30-45	4	5	6	525-725	6	2100
Geep	14-20	4	6	7	525-725	2	1060
Gelt	21-30	4	6	7	525-725	3	1340
Gem	28-40	4	6	7	525-725	4	1650
Gest	42-60	4	6	7	525-725	6	2350
Gild	26-36	4	8	9	425-525	2	2900
Gimp	39-54	4	8	9	425-525	3	3600
Gird	52-72	4	8	9	425-525	4	4300
Give	78-108	4	8	9	425-525	6	5800
Glob	40-56	4	10	10	325-450	2	4300
Glue	60-84	4	10	10	325-450	3	6100
Glan	80-112	4	10	10	325-450	4	7030
Glen	120-168	4	10	10	325-450	6	10100

McKeough & Trotter.

McKEOUGH & TROTTER, LTD., CHATHAM, ONT.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1	1½	2	3	2½	800	1	55
2	3	2	3½	3½	600	1	125
3	4	2	4	4	550	1	175
4	6	2	5	5	500	1	300
5	6	2	3½	3½	600	2	200
6	8	2	4	4	500	2	375
7	12	2	5	5	450	2	575
8	12	2	4	4	450	3	625
9	16	2	4	4	600	4	700
10	18	2	5	5	450	3	725
11	25	2	5	5	450	4	950

Maximotor.

MAXIMOTOR MAKERS, EAST DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1	40-50	4	4½	5	1200	4	190
2	60-75	4	4½	5	1200	6	275
3	60-70	4	5¼	5¼	1200	4	265
4	100	4	5¼	5¼	1200	6	360
Special	140	4	5¼	5¼	1200	8 "V" type	480

Nancy Lee.

ROCKINGHAM MACHINE WORKS, W. H. HAINES, PROP., KITTERY, MAINE.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	3½	2	3½	4	700	1	130
	7	2	3½	4	700	2	
	5¼	2	4½	4½	650	1	145
	11	2	4½	4½	650	2	265

Niagara.

NIAGARA GASOLINE MOTOR COMPANY, BUFFALO, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
AS-2	5	4	3½	4½	600	2	275
B-2	9	4	4½	5½	600	2	425
A-4	10-15	4	3½	4½	600-900	4	*430
B-4	18-25	4	4½	5½	600-900	4	*750
C-4	25-45	4	5½	6½	500-900	4	*1300
D-4	40-60	4	6¼	6½	500-900	4	*1400
C-6	40-65	4	5½	6½	500-900	6	*1650
D-6	65-90	4	6¼	6½	500-900	6	*1750

* Note.—The weights given are on motors, with iron crank chambers and bases. The motors marked with asterisk are also built in aluminum, with which they develop the higher rated power.

Nieland.

J. E. NIELAND & CO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	5	4	4	5	500	2	*450
	7	4	5	6	375	2	700
	10	4	6	7	350	2	1180
	12	4	6½	8	325	2	1350
	16	4	7	8½	300	2	1600
	20	4	7½	9 or 10	275	2	2150
	15	4	6	7	350	3	1600
	20	4	6½	8	325	3	2000
	30	4	7½	9 or 10	275	3	2800

* With reverse.

Nichols Oil Engine.

NICHOLS POWER CO., WEST WATERSIDE, STAMFORD, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
5-CM	5	2	4½	5	650	1	210
7½-CM	7½	2	5½	6	550	1	385
5-CM-2	10	2	4½	5	650	2	320
7½-CM-2	15	2	5½	6	550	2	525
Type D	6-7½	4	6	6	450-600	1	625
"	8-10	4	7	6	450-550	1	700
"	12-15	4	6	6	450-600	2	925
"	16-20	4	7	6	450-550	2	1075
"	25-30	4	6	6	450-600	4	1650
"	35-40	4	7	6	450-550	4	1800

Northwestern.

NORTHWESTERN STEEL & IRON WORKS, EAU CLAIRE, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1913	2	2	3	3	800	1	92
"	3	2	3½	3½	700	1	160
"	4	2	4	4½	600	1	190
"	6	2	4	5	600	1	215
"	10	2	4	4½	600	2	325
"	20	2	4	4½	600	*4	850

* Twin screw.

Oriole.

PAGE ENGINEERING COMPANY, BALTIMORE, MD.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1913	5	2	4½	5	475	1	330
"	7	2	5½	6¼	450	1	425
"	8½	2	6¼	6½	425	1	525
"	10	2	4½	5	475	2	500
"	14	2	5½	6¼	450	2	750
"	17	2	6¼	6½	425	2	960

Ontario.

A. E. OLMSTEAD, ONTARIO IRON WORKS, PULASKI, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Ontario 2-Cycle, 3-Port Valveless	2	2	2¾	3	900	1	50
	3	2	3½	3½	900	1	125
	6	2	3½	3½	900	2	190
	9	2	3½	3½	900	3	270
	12	2	3½	3½	900	4	350
	7	2	5	5	450	1	300
	14	2	5	5	600	2	500
	21	2	5	5	600	3	700
	28	2	5	5	600	4	900

Pierce-Budd Co.

PIERCE-BUDD COMPANY, BAY CITY, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
P. B. Co.	4-6	2	4	4	700-1000	1	118
"	12-15	2	4	4	1000-1200	2	170
"	18-25	2	4	4	1000-1500	3	237
"	40-60	2	4	4	1000-1700	6	390
"	275	2	6½	7	1200	6	1375

Weight includes fly wheel, carbureter and electrical equipment, and does *not* include clutch.

Palmer.

PALMER BROS., COS COB, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
NR-2	10	4	5	6	500	2	690
NR-1	5	4	5	6	500	1	350
NR-3	15-18	4	5	6	500	3	900
F-4	30	4	6¼	8	375	4	1200

Pilot.

TRUMP BROS. MACHINE COMPANY, WILMINGTON, DEL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	3	2	3½	4	700-800	1	237
A	6	2	4¾	5	550-600	1	360
B	6	2	3½	4	700-800	2	345
B	12	2	4¾	5	550-600	2	528

Portage.

PORTAGE BOAT & ENGINE COMPANY, PORTAGE, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	4	4	4¾	4½	600	1	275
	6	4	5	5½	575	1	400
	8	4	4¾	4½	600	2	400
	12	4	5	5½	575	2	525
	12	4	4¾	4½	600	3	525
	16	4	4¾	4½	600	4	650
	18	4	5	5½	575	3	675
	24	4	5	5½	575	4	800

Pearl.

A. A. ORMSBEE & CO., TAUNTON, MASS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1-A	6-7	4	5¼	6	500	1	400
2-A	12-14	4	5¼	6	500	2	750
4-A	24-30	4	5¼	6	500	4	1150
6-A	36-40	4	5¼	6	500	6	1400
4-D	40-50	4	7½	9	360	4	3000
6-D	60-70	4	7½	9	360	6	3900

Reliance Continental.

RELIANCE MOTOR BOAT COMPANY, NEW YORK CITY.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
J	40-50	4	5	5	1400	4	780
R	24-28	4	4¼	4½	1300	4	640
C	24-28	4	4¾	5¼	1300	4	600
Reliance Special	75-90	4	5¼	6½	1200	en bloc 6	850

Robinson.

ROBINSON MOTOR & STEEL BOAT WORKS, LINDSAY, ONT.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1	1½-2	2	3	3	600-900	1	62
5	4	2	3¼	3½	600-900	1	88
6	6	2	3¼	3½	600-900	2	153
7	12	2	3¼	3½	600-900	3	227

Rex.

REX MOTOR COMPANY, BOSTON, MASS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
E	6	2	4½	5	580	1	240
F	12	2	4½	5	580	2	390
G	18	2	4½	5	580	3	500
A	8	2	4½	5	800	1	260
B	16	2	4½	5	800	2	420
C	24	2	4½	5	800	3	535
D	32	2	4½	5	800	4	660

Regal.

REGAL GASOLINE ENGINE COMPANY, COLDWATER, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
FA	3	4	4	4½	700	1	*250
TA	4	4	4½	4½	700	1	*335
FB	6	4	4	4½	700	2	*[illegible]
TB	8	4	4½	4½	700	2	685
FC	12	4	4	4½	700	4	650
T	16	4	4½	4½	700	4	900
2-A	5	4	5¼	5¼	450	1	560
2-B	10	4	5¼	5¼	450	2	950
Z	24	4	5¼	5¼	500	4	1425
A	7	4	6½	7	400	1	1040
B	14	4	6½	7	400	2	1560
C	28	4	6½	7	400	4	2500
S	45	4	7½	9	400	4	4600
CB	32	4	4½	5½	1000	4	*600

* Weight without reverse gear.

Ralaco.

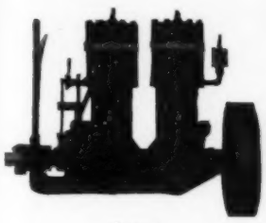
THE S. M. JONES COMPANY, TOLEDO, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
O	8-10	4	4	6	600	2	860
O	12-15	4	5	7	500	2	1300
O	15-20	4	4	6	800	4	1375
O	24-25	4	7	9	375	2	3300
O	25-30	4	5	7	500	4	2200
O	45-50	4	7	9	375	4	4800
O	75-80	4	7	9	400	6	6600

Red Wing.

RED WING MOTOR COMPANY, RED WING, MINN.

Name or Number of Model.	Rated H.P.	Port.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	3	2	2	3½	3	550	1	125
	5	2	2	3½	3½	550	1	170
	6	2	2	3½	3½	600	2	240
	10	2	2	4	4½	600	2	340
	15	2	2	4	4½	600	3	490
	4	3	2	4	4	600	1	160
	6	3	2	4½	4½	600	1	210
	8	3	2	5	5	600	1	225
	8	3	2	4	4	700	2	300
	12	3	2	4½	4½	700	2	300
	16-20	3	2	5	5	1400	2	300
	8-10		4	4½	5	500	2	425
	16-20		4	4½	5	550	4	800
	24-28		4	4	5	550	4	1000
	32-36		4	4	6	500	4	1300



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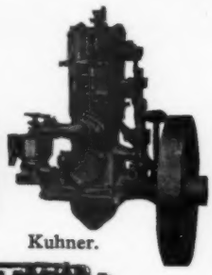

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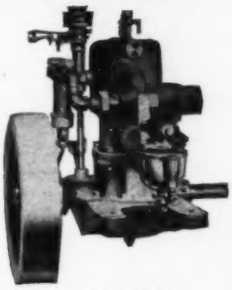

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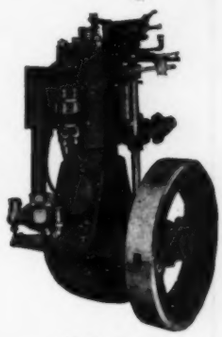

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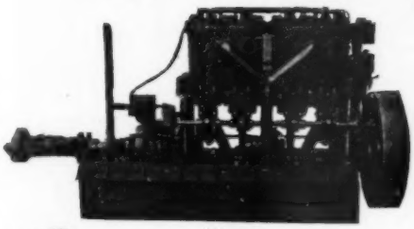

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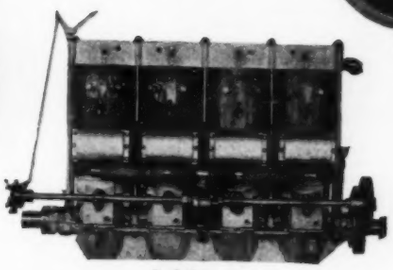

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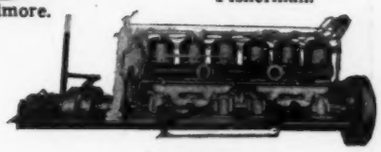

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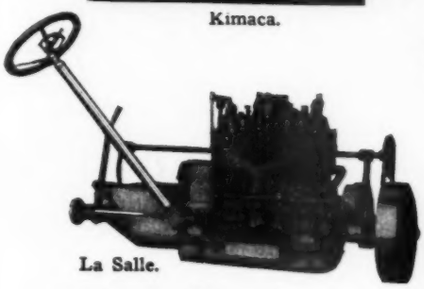
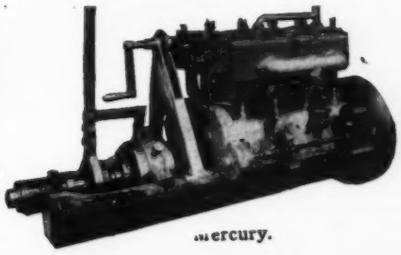


La Salle.



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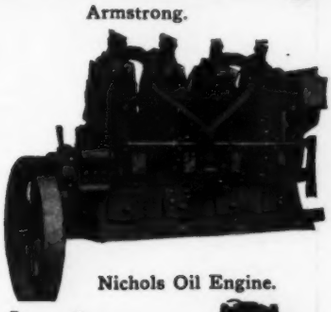
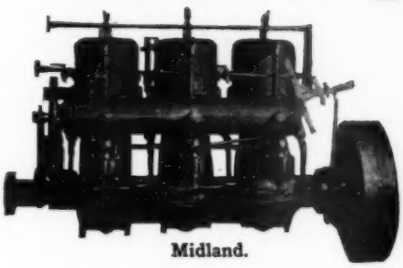
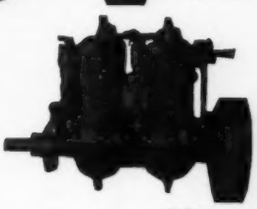


Nichols Oil Engine.



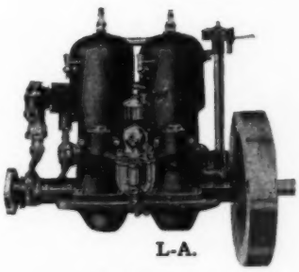
Midland.

Lisk.



Johnson.

Oriole.



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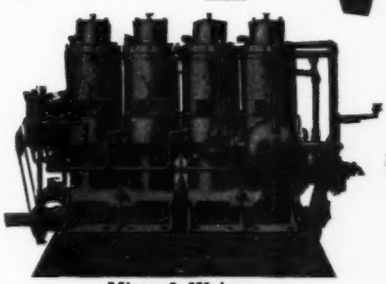
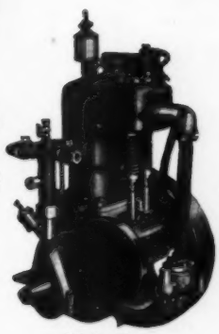


Mietz & Weiss.



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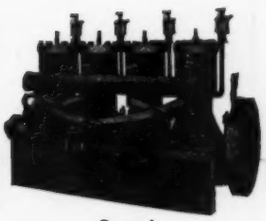
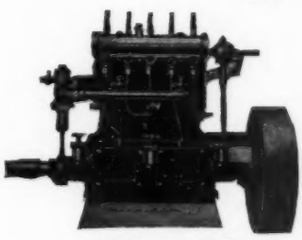
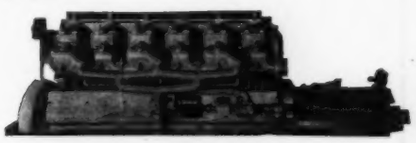


Ontario.

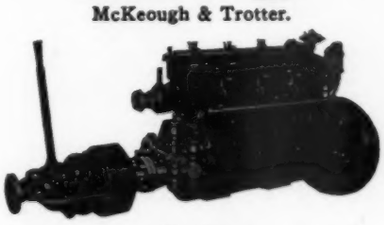


McKeough & Trotter.

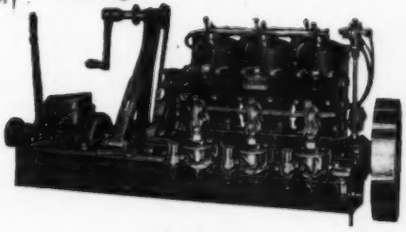
Sterling.



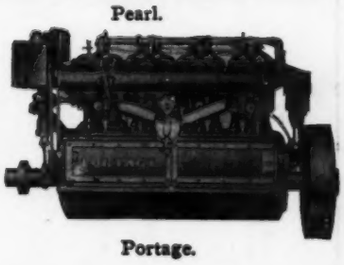
Pearl.



Sparks.



Mohawk.



Portage.

Roberts.

ROBERTS MOTOR COMPANY, SANDUSKY, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
O	3	2	3½	3	900	1	98
O Aerolite	3	2	3½	3	900	1	60
2-O "	6	2	3½	3	900	2	135
2-O "	6	2	3½	3	900	2	80
2-M	10	2	4	3½	900	2	260
2-M "	10	2	4	3½	900	2	140
3-M	15	2	4	3½	900	3	330
3-M "	15	2	4	3½	900	3	175
4-M	20	2	4	3½	900	4	405
4-M "	20	2	4	3½	900	4	234
2-P	20	2	4½	5	1000	2	300
2-P "	20	2	4½	5	1000	2	220
3-P	30	2	4½	5	1000	3	393
3-P "	30	2	4½	5	1000	3	265
4-P	40	2	4½	5	1000	4	498
4-P "	40	2	4½	5	1000	4	305
6-P	60	2	4½	5	1000	6	702
6-P "	60	2	4½	5	1000	6	385
4-X Featherw't	40	2	4½	5	1000	4	195
6-X "	60	2	4½	5	1000	6	270
Big Six	125	2	5¼	6	1200	6	400

Robert's Motor.

ROBERT'S MOTOR WORKS, LACHINE.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Heavy Duty	20-30	4	5	6	500-850	4	800
"	25-40	4	6	8	350-500	4	1600
"	40-55	4	7	9	350-450	4	2500
"	60-75	4	8	10½	350-400	4	3200
High Speed, Light Weight	40	4	5	6	800	4	550
	80	4	6	8	900	4	1000
	175	4	7	7½	1000	6	1150
	15-20	2	3½	4½	800-1000	4	240
	30-40	2	4½	6	800-900	4	500
	50-60	2	5¼	6½	750-875	4	600

Rutenber

RUTENBER MOTOR COMPANY, MARION, IND.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
W	15	4	4	4	1000	4	345
RA	20	4	4½	5	1000	4	450
U	24	4	4¾	5	1000	4	500

Remington Oil Engine.

THE REMINGTON OIL ENGINE COMPANY, NEW YORK CITY.

Name or Number of Model.	H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
Navy Special	35	2	8¾	8	400	2	2800
Other Sizes:							
6-CM	7	2	5½	6	500	1	800
9-AM	10	2	6¾	6	500	1	825
For Launches:							
6-CM-2	14	2	5½	6	500	2	1050
9-AM-2	22	2	6¾	6	500	2	1100
6-CM-4	32	2	5½	6	500	4	1750
9-AM-4	46	2	6¾	6	500	4	2000
For Heavy Boats:							
10-CM	11	2	7	8	400	1	1500
15-AM	17	2	8¾	8	400	1	1600
10-CM-2	24	2	7	8	400	2	2100
15-AM-2	35	2	8¾	8	400	2	2300
10-CM-4	50	2	7	8	400	4	3500
15-AM-4	75	2	8¾	8	400	4	4000

Richmond Scavenging Engine.

CARLSON & RUSS, INC., PORT RICHMOND, NEW YORK CITY.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Richmond	30	4 Scavg.	7½	11	360	2	3000
"	45	4 "	7½	11	360	3	4000
"	60	4 "	7½	11	360	4	5100
"	60	4 "	8½	11	350	3	5200
"	80	4 "	8½	11	350	4	5700
"	125	4 "	9¼	14	300	4	6800

San Francisco Standard.

STANDARD GAS ENGINE COMPANY, SAN FRANCISCO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
	4	4	4¾	5½	420	1	615
	5	4	5¼	6¼	400	1	850
	7	4	6½	7	380	1	1130
	8	4	4¾	5½	440	2	1900
	10	4	5½	6	400	2	1320
	12	4	6	7	380	2	1690
	16	4	6¼	7½	360	2	1785
	20	4	7¼	9	320	2	2885
	30	4	8¾	10½	300	2	4190
	25	4	6¼	7	450	3	2300
	30	4	6½	8	360	3	3285
	40	4	8	10	320	3	4875
	50	4	8¾	10½	300	3	6480
	80	4	9¾	12	280	3	9100
	110	4	11¾	15	250	3	14220
	140	4	13¼	17	225	3	17000

Strang.

STRANG ENGINE COMPANY, HARVEY, ILL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
M	2	4	3	4½	1000	1	360
M	3	4	3½	5	900	1	390
M	4	4	4	5	900	1	480
M	6	4	4½	6	850	1	698
M	8	4	5½	6	850	1	750
M	10	4	6½	7	650	1	800
M-2	15	4	6½	7	650	2	1100
M-2	20	4	6½	7	650	2	1250
M-3	30	4	6½	7	650	3	1800
M-4	40	4	6½	7	650	4	2500

Engine operates on oil.

Sterling.

STERLING ENGINE COMPANY, BUFFALO, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
Heavy Duty—C	8-10	4	4¾	6	400	2	700
" C	12-15	4	5½	7	400	2	975
" D	20	4	6½	8	400	2	1775
" D	25-35	4	5½	8	400	4	1600
" D	40	4	6½	8	400	4	2765
" D	60	4	6½	8	400	6	3600
" D	100	4	6½	8	400	8	4900
Speed — B	18-25	4	4¾	5½	600-1000	4	*590 †725
B	25-40	4	4¾	5½	600-1000	4	780 960
B	30-45	4	5½	6	600-1000	4	825 975
B	35-55	4	4¾	5½	600-1000	6	950 1225
B	45-65	4	5½	6	600-1000	6	1100 1450
Racing Engine	150	4	5½	6¾	1000	8	1400

* Aluminum base. † Iron base.

Speedway.

GAS ENGINE & POWER CO. AND CHARLES L. SEABURY & CO., CONSOLIDATED, MORRIS HEIGHTS, NEW YORK CITY.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
Medium Weight for General Service	10	4	4½	5	600	2	760
	15	4	4½	5	600	3	910
	18	4	4	4½	900	4	495
	23	4	4½	5	750	4	1050
	40	4	4½	5	800	6	1440
	43	4	6	6	600	4	1700
	82	4	6	6	800	6	2300
	108	4	6½	8	700	6	3100
	60	4	6½	8	650	4	2250
High Speed	130	4	6¾	8	900	6	2100
"	200	4	8	8	1000	6	2700
Air Starting & Reversing	150	4	8½	10	600	6	5900
	275	4	11	12	500	6	11400

Scripps.

SCRIPPS MOTOR COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
A	4½-6	4	4½	5	600-800	1	*335
B	7-9	4	5½	6	500-700	1	500
M	9-13	4	4½	5	600-800	2	†395 480
L	12-18	4	5½	6	450-700	2	760
H	18-30	4	4½	5	600-1000	4	600 735
K	24-48	4	5½	6	450-1000	4	865 1105
E	27-45	4	4½	5	600-1000	6	790 980
S	48-72	4	5½	6	600-1000	6	1185 1510
T	24-32	4	7½	9	350-450	2	2100
T	49-64	4	7½	9	350-450	4	3700
D	73-96	4	7½	9	350-450	6	5300

* Iron case. † Aluminum case.

All motors regularly equipped with reverse gear on extended base.

Note that semi-speed models may be furnished in either iron or aluminum crank case.

Smalley.

SMALLEY-GENERAL COMPANY, BAY CITY, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
MB	4-6	2	4½	4½	650-900	1	161
MC	8-10	2	5½	5½	500-750	1	298
MBB	12-15	2	4½	4½	650-900	2	311
MCC	20-25	2	5½	5½	500-750	2	468
M-3-B	25-30	2	4½	4½	650-900	3	449
M-4-B	35-40	2	4½	4½	650-900	4	686
M-3-C	30-35	2	5½	5½	550-750	3	858
M-4-C	40-45	2	5½	5½	550-750	4	1183
M-6-B	60-70	2	4½	4½	750-950	6	985
M-6-C	110-120	2	5½	5½	600-850	6	1776
ALUMINUM SMALLEY							
MB	4-6	2	4½	4½	650-900	1	110
MC	8-10	2	5½	5½	500-750	1	180
MBB	12-15	2	4½	4½	650-900	2	183
MCC	20-25	2	5½	5½	500-750	2	266
M-3-B	25-30	2	4½	4½	650-900	3	265
M-4-B	35-40	2	4½	4½	650-900	4	379
M-3-C	30-35	2	5½	5½	550-750	3	405
M-4-C	40-45	2	5½	5½	550-750	4	550
M-6-B	60-70	2	4½	4½	750-950	6	544
M-6-C	110-120	2	5½	5½	600-850	6	920

St. Lawrence.

THE ST. LAWRENCE ENGINE CO., LT., BROCKVILLE, ONT.

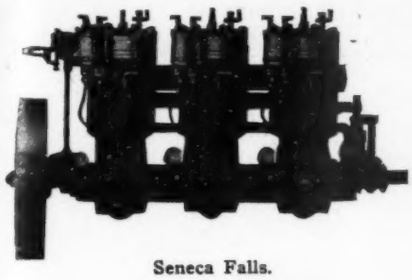
Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1	2-3	2	3¼	3½	750	1	100
2	3-4	2	3½	4	750	1	110
3	4-6	2	3½	3½	750	2	160
4	6-8	2	3½	4	750	2	190
5	9-12	2	4	4½	750	2	235
6	9-12	2	3½	4	750	3	255
A-6	9-12	2	3½	4	750	3	210
7	12-15	2	4	4½	750	3	300
8	15-20	2	4½	5	750	3	450
9	25-30	2	4½	5	750	4	530

Nos. 8 and 9 are complete unit power plants; reverse gear, high tension magneto, rear starter integral with engine.

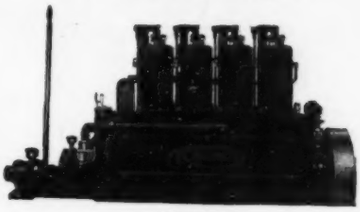
Schaefer Marine Motor.

SCHAEFER MANUFACTURING COMPANY, BERLIN, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1	30	4	5	5	100-1300	6	980
2	20	4	5	5	100-1300	4	680
3	15	4	5	5	100-1300	3	510
5	7½	4	4	4	100-1300	3	400
4	10	4	5	5	100-1300	2	430
6	5	4	4	4	100-1300	2	295
7	5	4	5	5	100-1300	1	230
8	2½	4	4	4	100-1300	1	175
9	35	4	5½	6	100-1300	4	780
10	5	4	4	4½	100-1300	2	415
12	10	4	5	5½	100-1300	2	495
14	20	4	5	5½	100-1300	4	905
11	7½	4	4	4½	100-1300	3	530
13	15	4	5	5½	100-1300	3	700



Seneca Falls.



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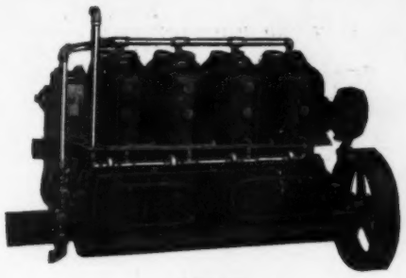
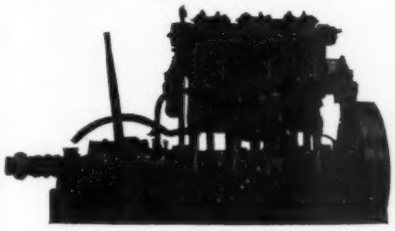


Schaefer.



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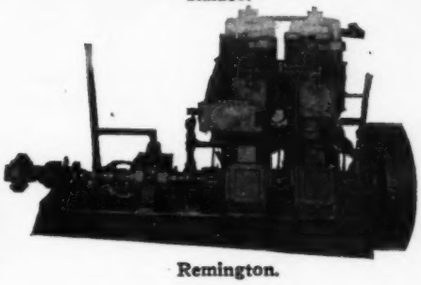

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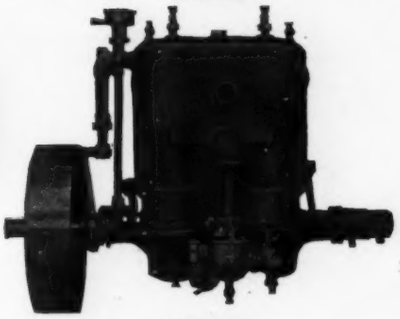

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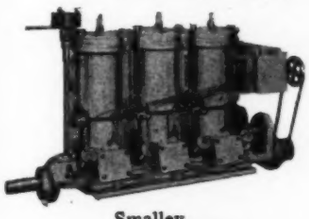

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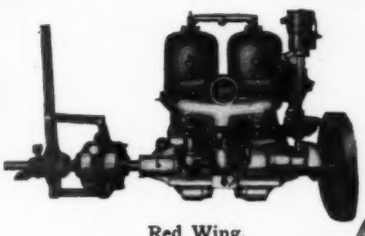

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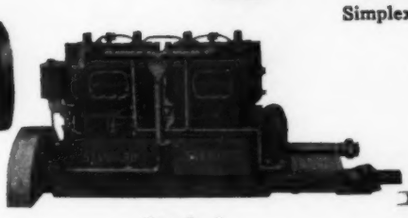

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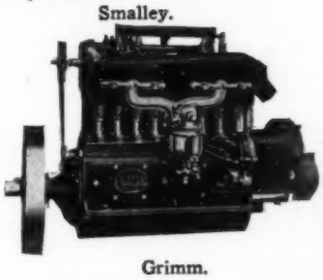

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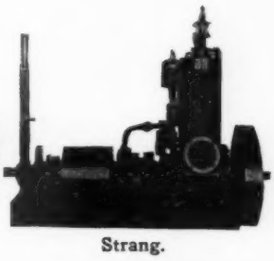

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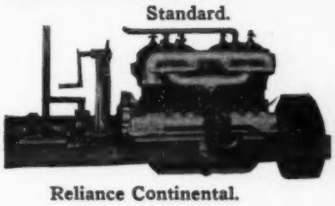

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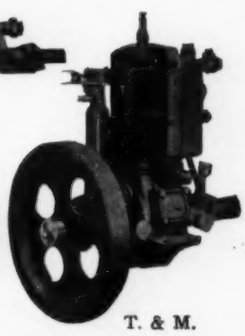
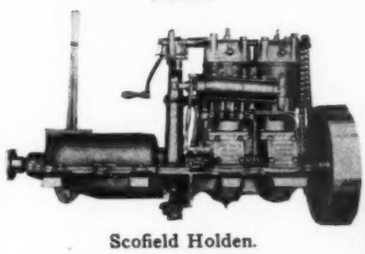
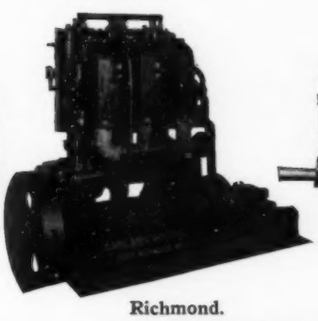


T. & M.



Scofield Holden.



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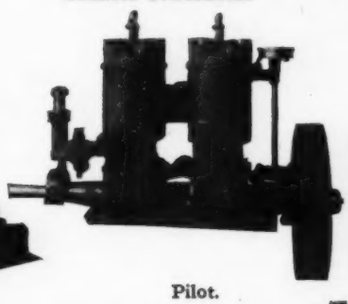

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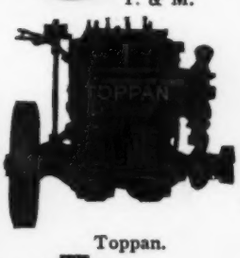

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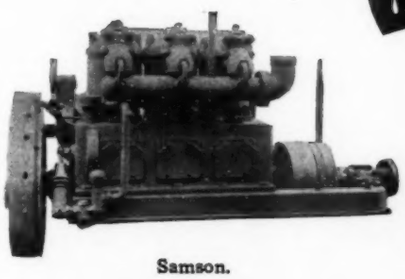
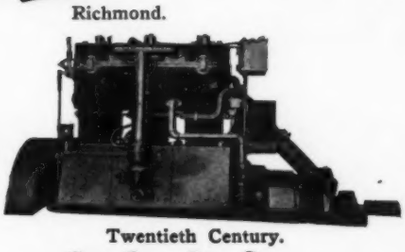
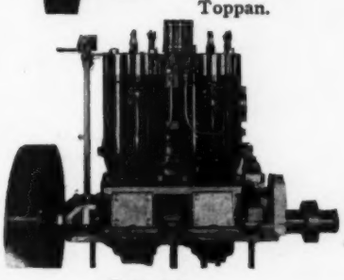


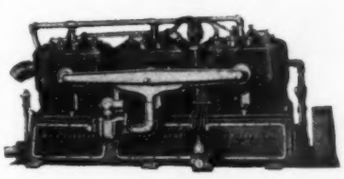
Samson.



Twentieth Century.

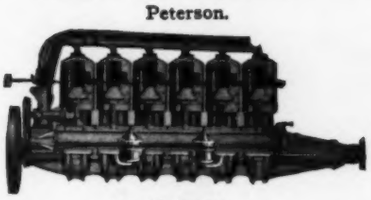


Peterson.



Trebert.

Sterling Racing Engine.



Roberts.

Standard.

STANDARD MOTOR CONSTRUCTION CO., 178 WHITON ST., JERSEY CITY, N. J.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Heavy Duty	10-12	4	5	6½	400-450	2	850
"	16-18	4	6	8	350-400	2	1250
"	20-24	4	5	6½	400-450	4	1600
"	24-27	4	6	8	350-400	3	1800
Auto Marine	25	4	4	5½	900	4	500
Heavy Duty	32-37	4	6	8	350-400	4	2800
"	50-54	4	6	8	350-400	6	3200
Auto Marine	60	4	6	6½	700	6	1500
Heavy Duty	65-75	4	8	10	350-400	4	5300
"	90-100	4	8	10	350-400	6	8000
AIR STARTING AND REVERSING TYPE.							
Single Act'g	125-150	4	8½	11	350-400	6	5800
"	300	4	12	14	300	6	9500
Double Acting	300	4	10	10½	300	6	8000
"	500	4	12½	13	300	6	16000
"	1000	4	16	16	280	6	25000

Stanley.

THE STANLEY COMPANY, 48 LORING AVE., SALEM, MASS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
D	3	2	4	3½	500	1	175
D	5	2	4½	5	500	1	251
D	7½	2	5½	6	425	1	350
D	12	2	6¾	7	425	1	625
D	6	2	4	3½	500	2	290
D	7	2	4	3½	550	2	290
D	10	2	5⅛	4½	450	2	495
D	14	2	5⅛	4½	550	2	495
D	15	2	5½	6	425	2	641

Sparks.

SPARKS BOAT & ENGINE COMPANY, ALTON, ILL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M	No. of Cylinders.	Weight Without Reverse Gear.
	5	4	4½	5	600	1	275
	10	4	4½	5	600	2	400
	20	4	4½	5	600	4	700

Samson Heavy Duty.

SAMSON IRON WORKS, STOCKTON, CAL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
	4	4	5	6	500	1	560
	6	4	5½	7	500	1	650
	8	4	6	8	500	1	975
	8	4	5	6	500	2	725
	12	4	5½	7	500	2	840
	16	4	6	8	500	2	1600
	20	4	7	9	450	2	2000
	25	4	6	8	500	3	2100
	30	4	7	9	450	3	2600
	40	4	8	9	400	3	4000
	50	4	8	10	400	3	4800
	75	4	10½	12	300	3	9550
	100	4	12	14	275	3	15000
	150	4	14½	17	225	3	24000

Sandow Marine.

DETROIT MOTOR CAR SUPPLY COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2½	2	2⅞	3¼	800	1	90
	4	2	3½	3½	700	1	125
	6	2	4½	4¼	700	1	180
Heavy Duty	8	2	5½	5	400	1	350
	10	2	3⅞	3½	700	2	195
	15	2	4½	4½	700	2	300
	20	2	5¼	5	700	2	500

S & H Motors

PERKINS BROS., HAVANA, ILL.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
H-1	3-4	2	4	3¾	600	1	150
S-1	4-5	2	4¼	4¾	600	1	200
J-1	6-7	2	5	5	500	1	275
Twin	7	2	3½	3¾	1000	2	250
H-2	8	2	4	3¾	650	2	270
S-2	10	2	4¼	4¾	650	2	340
J-2	12	2	5	5	550	2	440
H-3	12	2	4	3¾	700	3	385
S-3	14	2	4¼	4¾	700	3	465
J-3	18	2	5	5	600	3	600
H-4	16	2	4	3¾	800	4	400
S-4	20	2	4¼	4¾	800	4	590
J-4	28	2	5	5	700	4	700

Strelinger 4-Cycle.
Little Giant 2-Cycle.

THE STRELINGER MARINE ENGINE CO., DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Strelinger	40	4	6	6	500	4	1900
"	27	4	6	6	500	3	1600
"	18	4	6	6	500	2	1200
"	9	4	6	6	500	1	700
"	6	4	4¼	6	600	1	330
Little Giant	16	2	5	4	850	2	390
"	10	2	4	3½	800	2	245
"	4	2	3	2½	900	2	90
"	8	2	3	4	800	1	195
"	5	2	4	3½	900	1	150
"	2	2	3	2½	800	1	60

Simplex.

KOWALSKY MOTOR COMPANY, OAKMONT, PA.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
10	10	2	4½	4	700	2	145

Twentieth Century.

THE NEW YORK YACHT, LAUNCH & ENGINE COMPANY, MORRIS HEIGHTS, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
	12-16	4	5¾	7¼	400	2	1150
	15-20	4	6½	8½	350	2	1600
	25-30	4	8	10	350	2	
	18-24	4	5¾	7¼	400	3	1500
	24-30	4	5¾	7¼	400	4	1800
	30-40	4	6½	8½	400	4	2500
	45-50	4	6½	8½	400	4	2600
	50-65	4	8	10	350	4	
	45	4	5¾	7¼	500	6	2450
	65	4	6½	8½	450	6	
	100	4	8	10	425	6	
	150	4	9	10	425	6	

Truscott 4-Cycle—Racine 2-Cycle.

RACINE TRUSCOTT SHELL LAKE BOAT COMPANY, MUSKEGON, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
62	6	4	3¾	4½	750	2	310
72	10	4	4½	5	700	2	520
82	15	4	5½	6	650	2	975
92	31	4	7	8	600	2	1650
64	15	4	3¾	4½	900	4	510
74	21	4	4½	5	800	4	835
84	35	4	5¼	6	750	4	1350
94	72	4	7	8	700	4	2550
	1	2			600	Single	150
	2	2			550	"	175
	3	2			500	"	250
	4	2			450	"	300
	5	2			425	"	400
	6	2			400	"	450
	6	2			500	Double	325
	8	2			450	"	375
	10	2			425	"	475
	12	2			400	"	550
82½	14	4	6	7	350	2	1480
84½	28	4	6	7	350	4	2850
86½	42	4	6	7	350	6	3600

Toronto.

SCHOFIELD-HOLDEN MACHINE COMPANY, TORONTO, ONT.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
SHM	8	2	3¾	3½	800	2	214
"	15	2	4½	5	750	2	415
"	22½	2	4½	5	750	3	490
"	30	2	4½	5	750	4	680

T. & M.

TERMAAT & MONAHAN COMPANY, OSHKOSH, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	2	2	3	3½	600	1	110
A	3	2	3¾	3½	600	1	135
A	5	2	4½	4½	500	1	250
A	8	2	4	4	700	2	350
A	12	2	4¾	4¾	600	2	475
A	20	2	5¾	6	500	2	750
B	10	2	4	4	900	2	200
B	18	2	5	4¾	750	2	300
Heavy Duty	24	4	7	8	450	2	1700
"	36	4	7	8	450	3	2300
	48	4	7	8	450	4	2800

Tuttle.

TUTTLE MOTOR COMPANY, CANASTOTA, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
L	2	2	3¼	3	900	1	70
2-L	4	2	3¼	3	900	2	115
3-L	6	2	3¼	3	900	3	165
N	5	2	4½	4	700	1	155
2-N	10	2	4½	4	700	2	230
3-N	15	2	4½	4	700	3	325
T	10	2	6	5	500	1	280
2-T	20	2	6	5	500	2	440
3-T	30	2	6	5	500	3	600
2-X	18	2	4½	4½	1000	2	255
4-X	32	2	4½	4½	1000	4	400

Toledo.

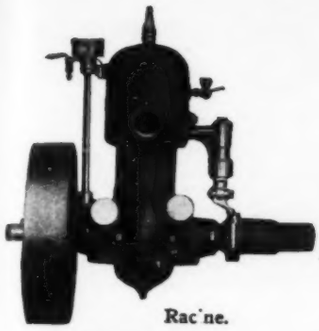
THE UNIVERSAL MACHINE CO., BOWLING GREEN, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
3 H.P.	3	2	3½	3½	750	1	135
6-7 "	6-7	2	3½	3½	750	2	200
6 "	6	2	4½	4½	750	1	190
12 "	12	2	4½	4½	750	2	300
18 "	18	2	4½	4½	750	3	420

Tygard.

"THE TYGARD ENGINE," 920 SOUTH AVE., PLAINFIELD, N. J.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Double Action	8	4	4	4	1000	1	200
*Hydro-Aero.	100	4	8	4	100-1800	2	500
	Built only to order.						
*Double Action	150	4	12	10	600-1000	2	2500
	*Built only to order.						



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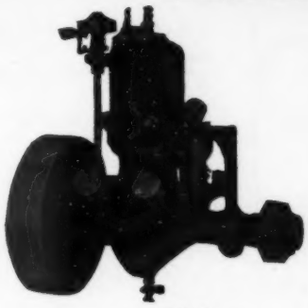
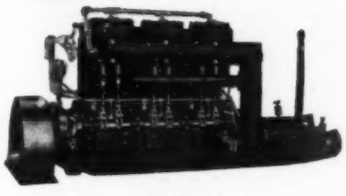


Toledo.

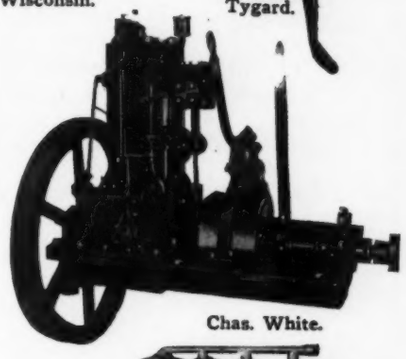
Wisconsin.

Tygard.



Wolverine.

Strelinger.



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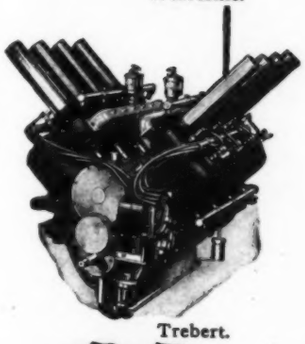

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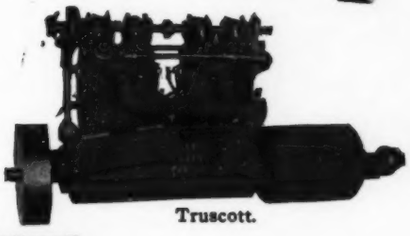

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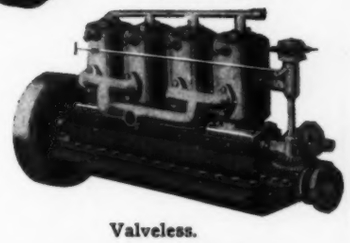
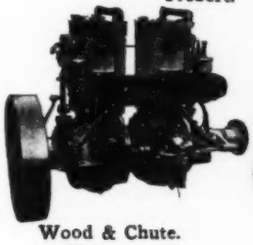


Valveless.



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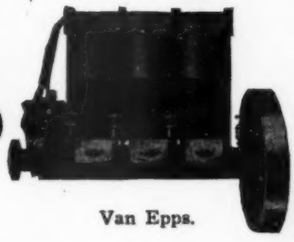

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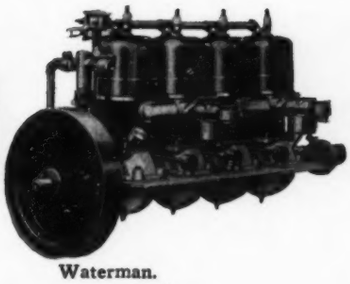
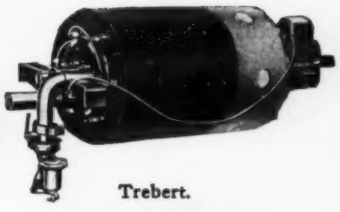


Waterman.



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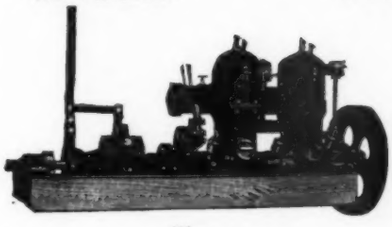
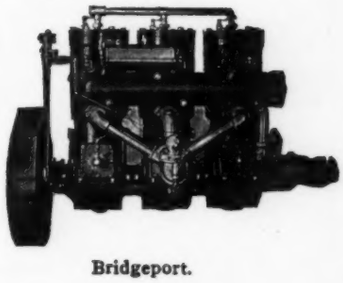


Vim.

Bevier.



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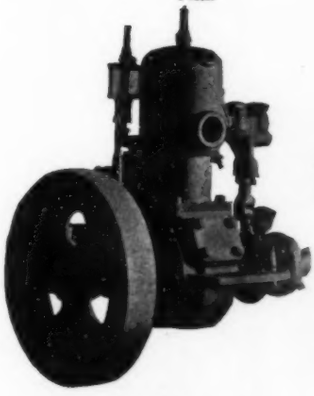

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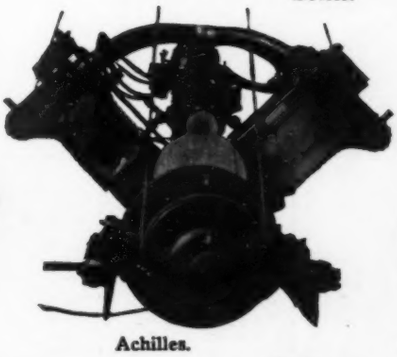

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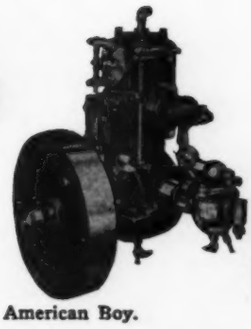


American Boy.

Barber.

Toppan.

TOPPAN BOAT MANUFACTURING CO., BOSTON, MASS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2	2	3	3½	600	1	120
	3	2	3¼	3½	600	1	160
	5	2	4½	4½	600	1	195
	8	2	4	4	700	2	300
	12	2	4¼	4¼	700	2	480

Trebert Reliance.

H. I. F. TREBERT ENGINE WORKS, ROCHESTER, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
4/40	40	4	4¾	5¼	1000	4	650
6/60	60	4	4¾	5½	1000	6	875
4/60	60	4	6	6½	900	4	1000
6/90	90	4	6	6½	900	6	1500
4/75	75	4	6½	8	600	4	3000
8-V	80	4	4¾	5	1000	8	450
4-P	40	4	4¾	5	1000	4	400
Rotary	40	4			700		275

Valentine.

T. J. VALENTINE, 178 VERMONT ST., BUFFALO, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2½	2	3½	3	800	1	
	5	2	3½	3	800	2	
	10	2	3½	3	1000	3	

Vim.

THE VIM MOTOR COMPANY, SANDUSKY, OHIO.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1	3	2	3½	3½	800	1	100
11	6	2	3½	3½	800	2	165
21	5	2	4	4	800	1	140
31	9	2	5	5	700	1	235
51	10	2	4	4	800	2	215
61	18	2	5	5	700	2	375
71	15	2	4	4	800	3	285
81	27	2	5	5	700	3	515
91	20	2	4	4	800	4	355
101	36	2	5	5	700	4	655
111	3½	2	4	4	450	1	165
121	6	2	5	5	450	1	270
131	12	2	5	5	450	2	410
141	18	2	5	5	450	3	560
151	13-15	2	4	4	1000-1200	2	210
161	19-23	2	4	4	1000-1200	3	255
171	26-31	2	4	4	1000-1200	4	325
181	35-40	2	5	5	900-1100	3	480
191	46-55	2	5	5	900-1100	4	590

Valveless.

NICHOLS & WRIGHT MOTOR COMPANY, BUFFALO, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	2½	2	3	3	100-900	1	65
	3½	2	3½	3½	100-900	1	96
	5	2	4	4	100-900	1	132
	8	2	3½	3½	100-900	2	160
	12	2	4	4	100-900	2	380
	16	2	5	5	50-600	2	325
	12	2	3½	3½	100-900	3	225
	24	2	5	5	50-500	3	520
	16	2	3½	3½	100-900	4	280
	24	2	4	4	100-900	4	465

Van Blerck.

VAN BLERCK MOTOR CO., 137 LEIB ST., DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
B-2	12-15	4	5	6	600	2	500
B-4	25-30	4	5	6	600	4	800
B-6	35-40	4	5	6	600	6	1150
C-4	50-60	4	5½	6	1000	4	650
C-6	80-90	4	5½	6	1000	6	850
C-8	100-125	4	5½	6	1000	8	1100
C-12	200	4	5½	6	1000	12	1450

Van Epps.

VAN EPPS MOTORS, 819 S. WEST ST., SYRACUSE, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
1-A	3-4	2	3½	3½	750	1	60
2-A	5-8	2	3½	3½	850	2	140
3-A	9-12	2	3½	3½	900	3	180
1-B	5-6	2	4½	4½	600	1	125
2-B	10-12	2	4½	4½	850	2	230
3-B	15-18	2	4½	4½	900	3	280
4-B	20-24	2	4½	4½	1000	4	380
2-E	15-20	2	5	5	800	2	250
3-E	27-30	2	5	5	900	3	300
4-E	38-40	2	5	5	1000	4	350

Willet.

WILLET ENGINE & CARBURETER CO., BUFFALO, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
B	12	2	4¾	5½	550	2	
D	24	2	4¾	5½	550	4	

Waterman.

WATERMAN MARINE MOTOR COMPANY, DETROIT, MICH.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
Outboard:							
C-13	2	2	2¾	3	850	1	54
Inboard:							
K-1	2	2	2¾	3	850	1	36
K-2	4-5	2	2¾	3	850	2	60
K-4	8-10	2	2¾	3	850	4	108
A-4	4	2	4	4	600	1	111
B-1	6	2	4	4	900	1	86
B-2	10-12	2	4	4	900	2	146
B-4	22-24	2	4	4	900	4	250

Wisconsin Valveless.

WISCONSIN MACHINERY & MFG. CO., MILWAUKEE, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
R	1½	2	2¾	2½	700	1	50
A	5	2	4	4	700	1	165
B	7	2	4½	4½	700	1	190
C	10	2	4	4	800	2	240
D	15	2	4½	4½	800	2	300
E	20	2	4	4	900	3	340
F	27	2	4½	4½	900	3	380
G	30	2	4	4	950	4	415
H	40	2	4½	4½	1000	4	500
I	45	2	4	4	1100	6	550
J	60	2	4½	4½	1100	6	670

Wood & Chute.

WOOD & CHUTE MACHINE COMPANY, GREENPORT, N. Y.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
A	3	2	4	4	600	1	
A	4	2	4½	5	550	1	
A	5	2	5	5	550	1	
A	6	2	5½	5	500	1	
A	7½	2	6	6	450	1	
A	6	2	4	4	600	2	
A	8	2	4½	5	550	2	
A	10	2	5	5	550	2	
A	12	2	5½	5	500	2	
A	15	2	6	6	450	2	

Wisconsin.

THE H. C. DOMAN COMPANY, OSHKOSH, WIS.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
Med. Duty	6	4	4	5	600	2	557
"	9	4	4	5	600	3	684
"	12	4	4	5	600	4	824
"	10	4	5	6	535	2	744
"	15	4	5	6	535	3	922
"	20	4	5	6	535	4	1140
"	30	4	6	6	535	4	1537
High Speed	25-35	4	5	6	700-900	4	850
"	40-50	4	5	6	700-900	6	1122
"	55-75	4	6	6	700-900	6	1662
Heavy Duty	16	4	6	8	400	2	1485
"	24	4	6	8	400	3	1790
"	32	4	6	8	460	4	2285
"	48	4	6	8	400	6	3150
"	20	4	7	9	350	2	1849
"	30	4	7	9	350	3	2185
"	40	4	7	9	350	4	2867
"	60	4	7	9	350	6	4105

White & Middleton Marine Engine.

THE CHARLES WHITE GAS ENGINE COMPANY, CHARLES AND WINDER STS., BALTIMORE, MD.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight Without Reverse Gear.
	10	4				1	
	15	4				1	
	25	4				2	
	30	4				2-4	
	60	4				2	
	60					2-4	
	120	4				4	

All engines have reverse gears built in frame of engine.

Westman Auto-Marine.

ENTERPRISE MACHINE COMPANY, MINNEAPOLIS, MINN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
Auto-Marine	4	4	4⅜	5½	600	1	275
"	6	4	5⅜	5½	600	1	325
"	6	4	5⅜	5½	600	1	400
"	8	4	5⅜	5½	600	2	500
"	12	4	5⅜	5½	600	2	600
"	14	4	5⅜	6¾	600	2	700
"	16	4	4⅜	5½	600	4	800
"	24	4	5⅜	5½	600	4	1000
"	28	4	5⅜	6¾	600	4	1150
"	40	4	6¾	7	500	4	1600
"	60	4	6¾	7	500	6	2250

Reverse gears are built on the engine frame.

Wolverine.

WOLVERINE MOTOR WORKS, BRIDGEPORT, CONN.

Name or Number of Model.	Rated H.P.	Cycle (2 or 4).	Bore.	Stroke.	R.P.M.	No. of Cylinders.	Weight With Reverse Gear.
Junior Special	5	4	5½	6	500	1	340
Model B	12	4	5½	7	500	2	750
	12	4	6½	7	400	2	1465
	18	4	6½	7	400	3	2205
	27	4	7½	9	350	3	2700
	36	4	8½	9	350	3	3542
	50	4	9½	12	300	3	6720
	65	4	10	12	300	3	7000
	75	4	11	12	300	3	7920
	100	4	12½	14	280	3	10277

The Prize Contest in Questions and Answers

The answers this month to the prize questions are excellent and anyone interested in the "Dink" question, as we all are, or a reliable steering gear, or the burning question of how to reduce the fuel bill, should be sure to read all the answers, as each contains some new and generally original idea.

One word about prizes: While formerly we insisted that the prize should consist of one article, yet so many winners have requested that we allow them to choose several, the aggregate list price not to exceed $25.00, so when this is allowed we must insist that the entire procedure in ordering be done through this office. Winners should send us a list of the articles desired with shipping instructions, and MoToR BoatinG will care for all the other details.

The Best All Round Dinghy.

Excellent Designs for the Round Bottom, Flat Bottom, Dory, Dory Skiff, V-Bottom and Pram Types to Suit All Requirements.

THE PRIZE CONTEST—Answers to the First Question in the October Issue.

A Round Bottom Dinghy.

Prize Won—Kodak Shutter from Herbert & Huesgen.

AMONG the many requirements of a dinghy, can be mentioned good carrying capacity, stability or seaworthiness, easy rowing as well as towing and of reasonably light weight and able to stand considerable knocking about.

The dinghy shown herewith meets the above requirements unusually well. An over all length of ten feet was decided upon as being a convenient size to hoist out on deck by davits or pull up in the cockpit of the average cruiser. The conditions in most long distance racing rules call for a dinghy of that size. The W. L. length is 9 ft. 8½ ins. and the extreme beam 3 ft. 8 ins. The sheer is good, with a drop of 6½ ins. The ample freeboard, slightly tumbled sides and practically straight stem all help to make a big boat on the given length. The fore foot is well cut away, which accounts for the dinghy's great towing qualities. Good carrying capacity is obtained by the flared bow sections, which also prevent plunging when heavily laden and spray coming aboard. The buttocks show a hull of more than average stability and of sufficient "dead rise" to insure easy handling under oars. The keel is straight and stops 9 ins. aft of Section 6. This is not an objectionable feature even if the boat is always to be used as a rowing dinghy, and it makes the installation of a motor a simple problem for the man who gets the ambition to own a power tender. While on the subject of power, a suitable motor is one of 2 to 3 h.p., 2 cycle, single cylinder, light weight. It should be installed just forward of the midship thwart. The engine bed logs should be of oak sided 1¾ ins. and about 2½ ft. long. The floors can be 1¼ ins. thick and securely fastened to the frames and engine bearers.

The displacement is evenly distributed, the center of buoyancy being 5 ft. 2 ins. aft the bow on water line No. 3, and the weight carried at this line is 380 lbs. With a total dead weight of 1,070 lbs. the dinghy still has a freeboard forward of 14½ ins., aft of 10½ ins. and least of 7½ ins., with the center of buoyancy 4 ins. aft the mid section. The weight of the hull is 110 lbs.

The clinker or lap strake method of planking was used in preference to the smooth carvel way. The former system does away with caulking and makes an exceptionally tight hull. All the construction is substantial and very simple. The keel, keel batten, stem and frames being of oak. Planking of cedar, widths of strakes at No. 4 and overlap shown on construction section. A wedge-shape piece is fitted between the frame and the garboard plank to make better fastening. The small space near the keel batten is left as a limber. The stringer is of mahogany and runs parallel to the water line. The mahogany thwarts rest on the stringer. The forward thwart extends aft to Section No. 2. The midship thwart is 10 ins. wide with the forward edge at No. 4. Oarlocks placed 22 ins. aft Section No. 4. The after thwart is placed aft of No. 6 and is 12½ ins. wide. The lazy back is also of mahogany and is 13 ins. high. Two knees are placed on both sides of the thwarts and fastened with brass screws. The transom is of 1 in. mahogany and in one piece. Hackmatack is used for the stern knee, which is 1¾ ins. thick, extends nearly to the sheer line and well down on the keel batten.

LESTER KENWOOD, New York City.

Questions for the February Contest.

Describe with sketches or photographs a desirable arrangement of propeller strut and steering gear for a speed boat or fast runabout.

Suggested by E. P. Culver, Schenectady, N. Y.

Describe with drawings an appliance home-made or otherwise, hand, automatic or mechanically operated for disposing of bilge water.

Suggested by W. A. Wright, St. Paul, Minn.

Discuss from the standpoint of efficiency and seaworthiness the relation of beam, length, horsepower and speed for a small cruiser, giving accurate data if possible.

Suggested by President, New York City.

Rules for the Contest.

Answers to these questions, addressed to the Editor of MoToR BoatinG, 381 Fourth Ave., New York, must be: (*a*) In our hands on or before December 24, (*b*) about 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the 24th of December.

The prizes are: For each of the best *answers* to the questions above, *any article* advertised in MoToR BoatinG, of which the advertised price does not exceed $25, or a credit of $25 on *any article* advertised in MoToR BoatinG, which sells for more than that amount.

(*There are three prizes, one for each question, and a contestant need send in an answer to but one, if he does not care to answer all.*)

For each of the *questions* selected for use in the next contest, *any article* advertised in MoToR BoatinG, of which the advertised price does not exceed $5, or a credit of $5 on *any article* advertised in MoToR BoatinG, which sells for more than that amount.

For non-prize-winning answers published we will pay space rates.

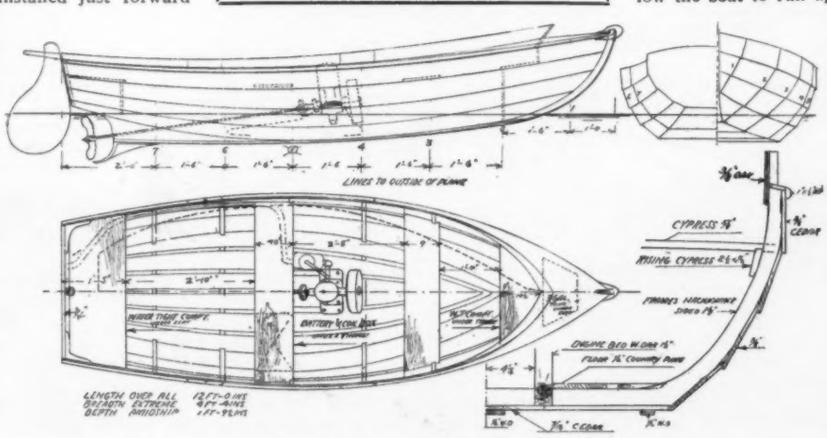
When you send in your answers, state what you will take if you win a prize.

A Flat Bottom Motor Tender.

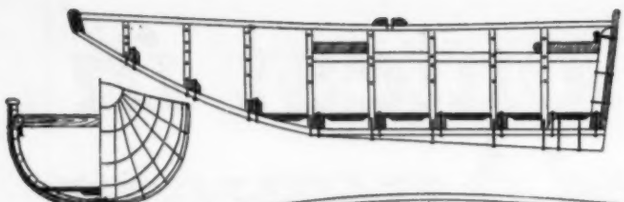
THE design contemplates a light 12-foot flat bottom, lap straked boat with 2 h.p. Belle Isle motor. The form will allow the boat to run up a beach for dry landing and is of sufficient freeboard to run safely and dry in rough water.

The boat to be built of white cedar with hackmatack frames, a white oak coaming is fitted to give additional freeboard without making boat look clumsy by carrying plank to the required height.

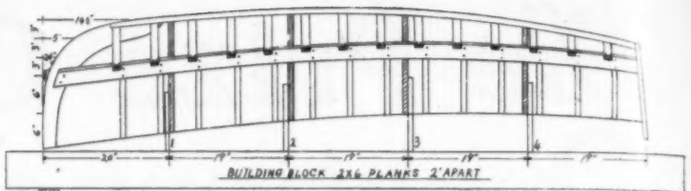
The seat aft and forward thwart together with bulkheads immediately below form watertight compartments for dry storage of anything. The steering gear to consist of braided



Mr. Cassidy's design for a flat-bottom motor tender.



Mr. Ross recommends a Norwegian pram.



The V-bottom is also applicable for a tender. Mr. Christie's complete design.

cotton line leading from the rudder, through the stern forward on the inside of coaming through screw eyes and a sheave forward then aft on opposite side to the other side of the quadrant.

A Thermex Silencer is fitted at the exhaust with pipe connection through stern.

The general dimensions are: Length over all, 12 ft.; breadth, extreme, 4 ft. 4 ins.; depth amidships, to top of coaming, 1 ft. 9½ ins.; draft, extreme, 12 ins.; freeboard at 8 ins. depth of hull to top of gunwale forward, 1 ft. 9 ins.; amidships, 1 ft.; aft, 1 ft. 2½ ins.; displacement at this draft, 600 lbs; weight of hull, 200 lbs. The boat to be built as molds at stations 3, 5, and 7. The top of mold 5 being carried up to be in line with 3 and 7, the molds can then be set upside down on level blocking, this level line can be extended to stem and stern to get the proper elevation for setting the stem to stern.

The bottom plank of five pieces to be secured together at locations of 2, 4 and 6, by cross braces 1 in. thick by 1½ ins. in depth, then the whole bottom bent down over molds and secured to them by screws; molds having been regulated by being placed at right angles with the fore and aft center plumbed and held in place by light battens.

The bottom after being secured to molds is to have the edges leveled to suit the sides of the molds. The shapes of the molds can be obtained from the body plan by sketching in the thickness of plank ⅜ in. as shown on the large section, then taking off the proper dimensions for each edge measuring up from bottom and out from center line.

To get the shape of planking after molds are in place, use a batten about ¼ in. thick by 2 ins. wide and 12 ft. 6 ins. long; secure the batten, which is known as a rule staff, near the upper edge of the first strake location, then bend against the molds and secure with small nails; be careful not to spring the batten edgewise.

After being secured in place make a line across the batten and in line with edge of molds.

Measure the distance from edge of batten to location of underside of bottom plank and locate on this cross line. The exact width of plank is also to be measured and marked at side of first dimensions.

Repeat the operation on each mold from stem to stern.

Remove batten and lay out straight on a ⅜ in. cedar board, which is to be used for side plank.

Locate the spots obtained from molds in direction of cross lines of batten from the lower edge and mark width also, as recorded on the batten at each station. Through these spots draw line for edge of plank by means of a strip held temporarily at spots by small nails.

After plank is cut to shape, mark out another from it for the opposite side. The operation can be repeated for each pair of planks.

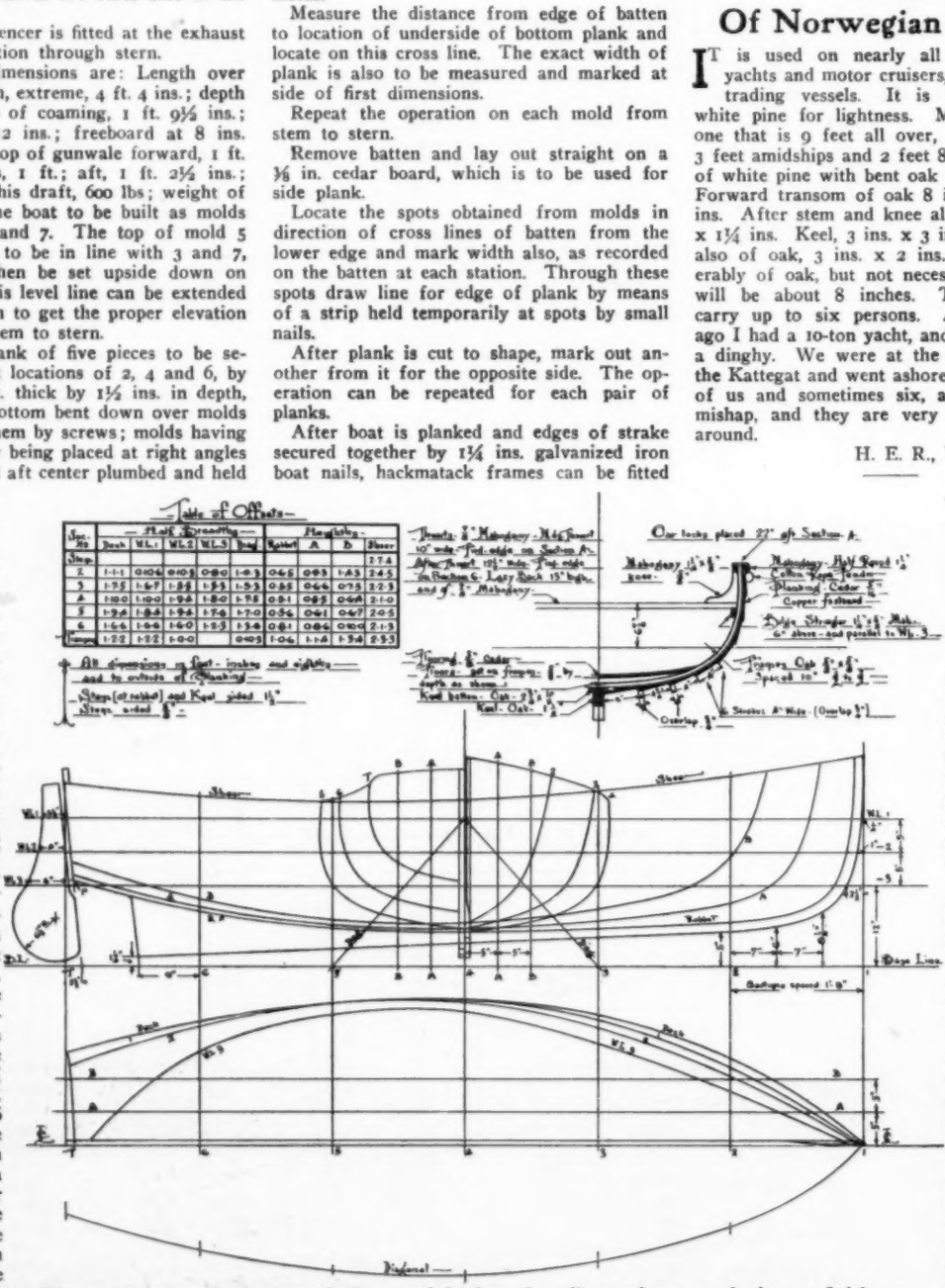
After boat is planked and edges of strake secured together by 1¼ ins. galvanized iron boat nails, hackmatack frames can be fitted to intermediate stations. The balance of the work is easy to follow from the plans.

ARTHUR B. CASSIDY.

Of Norwegian Origin.

IT is used on nearly all the Norwegian yachts and motor cruisers, also fishing and trading vessels. It is usually built of white pine for lightness. My sketch shows one that is 9 feet all over, with a beam of 3 feet amidships and 2 feet 8 inches aft, built of white pine with bent oak ribs 1 in. x 1 in. Forward transom of oak 8 ins. x 4 ins. x 2 ins. After stem and knee also of oak, 2 ins. x 1¼ ins. Keel, 3 ins. x 3 ins. Floor beams also of oak, 3 ins. x 2 ins. Thwarts preferably of oak, but not necessary. The draft will be about 8 inches. The dinghy will carry up to six persons. About ten years ago I had a 10-ton yacht, and I had just such a dinghy. We were at the time cruising in the Kattegat and went ashore and aboard, five of us and sometimes six, and never had a mishap, and they are very handy boats all around.

H. E. R., Winona, Minn.



The round bottom tender is no doubt one of the best for all round uses and gives a finish appearance to any cruiser. Mr. Kenwood's design is complete in every particular.

A V-Bottom Dinghy.

A DINGHY of the V-bottom type was selected not only on account of its being easier to build, but because for easy towing, seaworthiness, and stability, they are unexcelled by any other form.

The plan of building has been used on many boats of this type; it is an easy way and makes a very strong boat.

After the molds are made and set up as shown in the building plan, the stem and transom are got out and put in place and tacked to the molds. The forward ends are cut to fit the stem and nailed in place.

A heavy batten,

1 in. x 3 ins., is sprung over the molds in the notches provided. The bottom ribs, ½ x 1¼, are steamed and given a sharp bend in the center; they are then placed over this batten and the ends nailed into notches cut in the chine. The keel of ⅞ in. x 3 in. pine is now laid over these frames and fastened to stem and frames. It is then beveled off to the angle of the bottom, also the stem, as there is no rabbet to be cut, the planking extending over and the wood protected with a ¾ in. half-oval brass stem band.

The side frames are ¾ in. at the heads and 1½ ins. at the heels and notched out to fit over chine. They can now be put in place and fastened to the chine and this completes the frame.

The planking is ⅜ in. thick and the joint of the first two should be over center of heel. After these are on the seam they can be planed down, forming a flat about one inch wide, over which is laid a strip of painted cotton and the skeg and the small wood chaffing strip fastened on.

The other seams are shiplap. They should be nailed at each frame and also have two clout nails between each. This seam is very easily made with a suitable plane for the purpose. Once made they stay tight as long as the boat lasts.

For fenders use a heavy one and one-half inch or two-inch half-round molding.

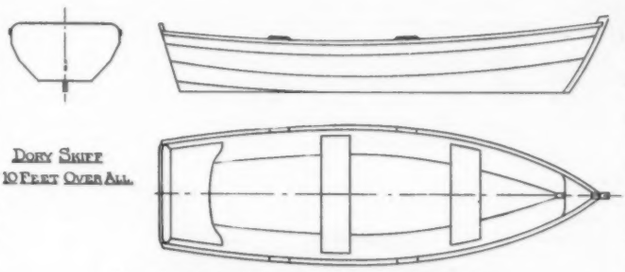
CHAS. H. CHRISTIE,
Saginaw, Mich.

The Dory Skiff.

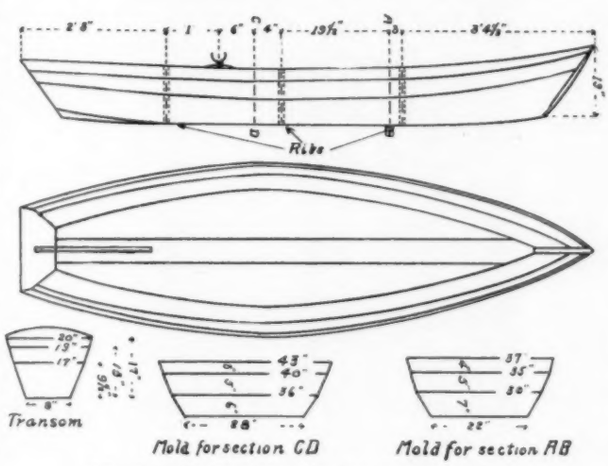
IN the order of their importance the qualities of the ideal dinghy for a small power cruiser are as follows: Safety, carrying capacity, easy rowing qualities, good towing qualities, ease of hauling out (on beach or float) lightness, cost and appearance. Of course in some cases the above order would be materially changed and some qualities would be required by some owners at the expense of others.

The one small boat which appears to combine all of the above requirements to the greatest extent is the craft usually known as the dory skiff, and in practice I can testify that this little boat actually does make a most excellent tender. Her flaring sides and overhanging bow make her an uncommonly good sea boat, dry and buoyant, while her fairly broad flat bottom gives ample stiffness for comfort and safety. The usual stock construction, while simple and inexpensive, produces a boat of great strength and at the same time not too heavy for two men to lift into the cockpit when the cruiser is bound on an all day's run off shore. In a ten-foot dory skiff four or five persons can find ample room and there will be freeboard enough left to keep out the wet, even though the water may not be of mill-pond smoothness. Few small boats row any more easily than this model and the annoying tendency of the common skiff or "punt" to whirl round is much less pronounced in its more shipshape and seaworthy relative. It performs quite well at the end of a painter when in tow of the launch, but does not seem to like a long tow line; just why I do not know. However, in ordinary seas it gives no trouble, and in heavy weather it is best to find room for it in the cockpit or on the cabin top.

Owing to its flat bottom and moderate weight the dory skiff is easily dragged up the beach out of reach of the tide, or is handily pulled up or launched from the raft or float. It stands this sort of handling without leaking and is probably as durable as a round bottom dinghy costing four times as much. The cost of a stock tender of this model is, for the ten-foot length, $15. A pair of oars and galvanized row locks are included. The whole outfit is severely plain, but very serviceable. While beauty is not its leading virtue the dory skiff is by no means bad looking, having a pleasing sheer and ends which harmonize.



Mr. Goold sticks to the good old dory skiff.



Mr. Crawford's design for the modified dory.

These boats are usually planked and bottomed with white pine, with oak knees (or frames) stem, transom and thwarts. The gunwale may also be of oak. The ordinary thickness would be one inch for the bottom, which would be in three pieces, and one-half inch sides. The sides are ordinarily planked three strakes on each side, with separate gunwale. They are galvanized nailed, all the fastenings being clinched. The construction follows regular dory practice as regards knee-frames, planking, etc. The ten-foot boat (which is probably best adapted for use as a tender) is about three feet extreme beam and has two thwarts and a seat across the stern. It may be built by the amateur boat builder, but like the bank dory, it is not a particularly easy craft to construct at home. Its low cost, however, places it well within the reach of the average cruising man, and if he is ever forced to "abandon ship" in a rough sea he will realize that his dinghy-money has been wisely spent.

ALLAN O. GOOLD, Portland, Me.

Built from Motor Boating's Plans.

AFTER having used several different kinds of boat for this purpose, I consider the one described below as the best all-around dinghy for the small cruiser.

I built one of these boats, the materials of which cost less than $15, and found it a thoroughly practical boat, that may be built easily by the amateur. The dimensions are 9 ft. long by 4 ft. beam, and it has seating capacity for five or six people.

It is of a modified V-bottom construction, with cypress keel ⅞ in. thick and 16 ins. wide at the widest part. The sides and bottom are constructed of ⅜ in. x 4¼ in. tongued and grooved cypress sheathing, and the outside, except the keel, covered with 8 ounce canvas, painted. The sides are reinforced by the introduction of ribs, 13 inches apart, bilge stringers and gunwale, and the canvas is fully protected by oak strips 1¼ in. x ⅜ in.

This dinghy has a great many points in its favor. It is more seaworthy than a flat-bottom skiff, rows and tows more easily, by test taking only .42 h.p. to tow at a speed of 8½ miles per hour. It is stiff and light, weighing about 82 lbs., if constructed as per specifications. It can be rowed very close to the beach, where the water is shallow, and further, it has been left out on the beach for two weeks at a time without leaking, which is more than can be said of a small boat of other construction.

The plans and details are illustrated on pages 26 and 27 of the May, 1910, issue of MOTOR BOATING, and complete instructions for its construction are fully described on pages 10 and 11 of the same issue.

JOHN CLITHEROE.

Mr. Clitheroe's dinghy actually built from recent designs that appeared in MoToR BoatinG.

The Steering Gear for the Cruiser

Seven Different Designs, Each Embodying Some Principle Worthy of Note.

THE PRIZE CONTEST—Answers to the Second Question in the October Issue.

An Excellent Arrangement With an Auto Wheel.

Prize Won—Shaft and Propeller from the Hyde Windlass Co.

IT is simple in construction, nothing connected with it having to be made specially, all the various parts being readily obtained of any dealer in marine hardware.

The drawings show the construction in detail of the steering post and quadrant. A bronze shaft 13 inches long and 1 inch diameter, turns in two bronze bearings, with a sprocket of nine teeth between the bearings fastened on the shaft with a key and set screw. One of the bearings is fastened to the cabin bulkhead and the other, which may be seen in the photograph, to the front of box, which protects the steering apparatus from the weather.

The sprocket meshes with a 1 in. pitch block chain and each end of chain is connected to a flexible steel galvanized wire rope ¼ in. diameter, which runs under the cockpit floor, around large sheaves 5 ins. diameter, fastened under the floor, to the galvanized quadrant under the after deck. If space will permit, sheaves of larger diameter may be used to make the rope more durable. Inserted between one end of the chain and rope is a turnbuckle, to take up any slack or stretch of rope that may occur in use.

One complete turn of the steering wheel moves the rim of the quadrant 9 inches in this outfit, but by varying the size of sprocket and quadrant any ratio may be obtained.

The quadrant is attached to a 1 in. bronze rudder post, which is squared on top so a hand tiller can be put on and used in case of emergency. The rudder post turns in a bronze tube with a stuffing box on top of tube.

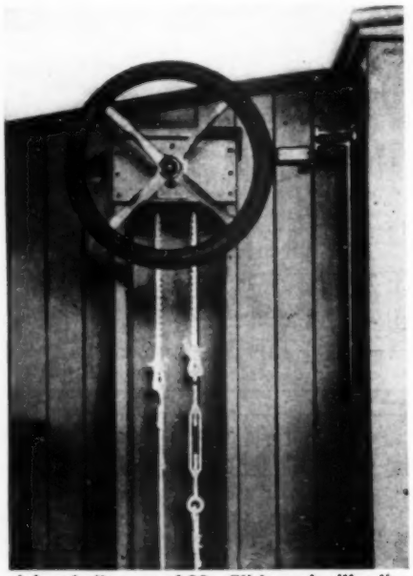
This equipment answers the purpose of a more expensive outfit and has been used several seasons without giving any sign of trouble, care having been taken to lubricate the rope occasionally with graphite grease where it bends over the sheaves.

The regulation steering wheel may be used instead of the auto steering wheel shown, but I have found that this wheel is less tiring during a long trick, and can be used in a sitting or standing position with more comfort.

JOHN CLITHEROE.

Tiller Line Boiled in Paraffine.

THE end of the rudder stock should be milled square for an emergency tiller. Immediately below the square was cut a ¼ in. x ⅛ in. key way. The quadrant was cast steel 15 ins. radius and in addition to the key was secured by two ⅜ in. cup pointed set screws. A rudder stop was provided by a 1 in. x 6 in. oak piece bolted by two ¼ in. brass stove bolts at each end to an oak cleat, which in turn was secured to the sheer clamp by three bolts. The stop was set to give a helm angle of 43 degrees. On the starboard side a No. 5 deck halyard block was bolted to the gasoline tank clamp; on the port side a sash pulley was let into the tank clamp. These pulleys were set so as to give a rope lead



A box built around Mr. Clitheroe's tiller line gives ample protection.

tangent to the quadrant. The starboard lead was carried to the port side and turned forward, the bend being taken by a cheek block; a similar block was placed under the above to bring the port lead in the same vertical plane. The blocks being secured by ¼ in. brass stove bolts. The leads were let through the rear seat framing by ⅝ in. holes and carried along the outside of the cockpit ceiling through eight (4 to each lead) brass shoulder eyes. The bend to the wheel was made on deck halyard blocks secured to the side by ¼ in. brass stove bolts carried through the planking and plugged. The steering wheel was secured to the bulkhead by four ¼ in. brass stove bolts. The rope was wrapped four turns around the drum and secured by a galvanized staple. Experience with various kinds of steering ropes has shown that Sampson spot sash cord thoroughly stretched and boiled in paraffine will give the longest service in small cruiser work. The ends of the line should be whipped. The slack can be taken up and the ends made fast by hitching around the spokes of the quadrant. Mechanical clamps requiring the use of tools to make up will not be found satisfactory in close places. It will be noted from the sketch that the quadrant is entirely under the quarter deck (no hatch is provided); with a spare line at hand the old line can be taken out and renewed in less than ten minutes.

D. G. STANBROUGH, Norfolk, Va.

Rack and Pinion Type.

OF the several methods of rigging a steering wheel, the rack and pinion type appeals to me, for the reason that after once fitted it is the strongest of all. While chain may be used in place of the cut tooth rack, yet chain is only as strong as that weak link.

The larger gear wheel in Fig. 1 is about 18 ins. in diameter, the smaller about 6 ins. The gear racks are 24 ins. in length, all have cut teeth rather than cast. The rack guides are of bronze or steel, as are the 3 in. pulleys. The rope is bronze center and the turnbuckle is bronze. The turnbuckle should have lock burrs, to fasten after the rope is tightened.

Cross timbers serve as supports to the pulleys, rack guides and bearings for the wheelpost and tiller post. These are bolted to the sides and stern of the boat.

Fig. 2 shows side view of the arrangement, with ropes just below the rear deck or cockpit floor as the case may be.

Fig. 3 is a partial view of the gear rack, with the guide slots in top and bottom sides, and the hole tapped in the ends. A machine threaded eye bolt screws into the holes and provides means for fastening the rope.

Fig. 4 shows one of the guides that hold the rack in its proper place, these, of which there are four, are bolted to the cross timbers mentioned before.

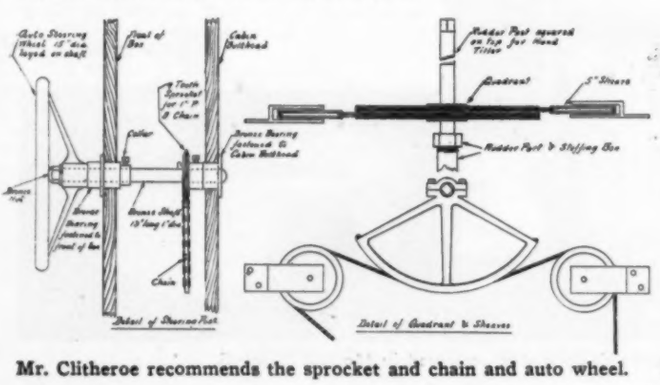
Fig. 5 is a view of the Auto wheel and bevel gears, "a regular spoke wheel may be used." The metal bearing is removed to show gears.

Fig. 6 is another view of Fig. 5. "A" is a bearing of metal, which was made by a local machinist, as are the other parts; it is ½ in. stock, and of sufficient size to enclose the beveled gears.

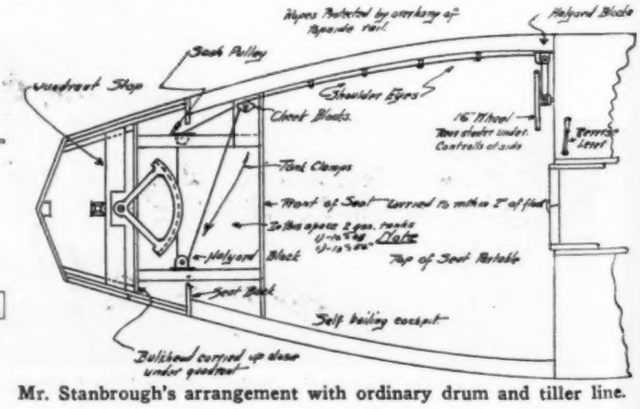
MELVIN D. ANDREWS, Canandaigua, N. Y.

Tiller and Sliding Traveler.

ACCESSIBILITY and reliability are the two main factors. There should be no unnecessary parts on the line and the lead should be as straight as possible, with all turns made over large sheaves.


Auto Steering Wheel 15" dia. keyed on shaft
Front of Box
Cabin Bulkhead
Teeth Sprocket for 1" P. B. Chain
Collar
Bronze Bearing fastened to Front of Box
Bronze Shaft 13" long 1" dia.
Chain
Detail of Steering Post
Rudder Post squared on top for Hand Tiller
Quadrant
5" Sheave
Bronze Bearing fastened to Cabin Bulkhead
Rudder Post & Stuffing Box
Detail of Quadrant & Sheaves

Mr. Clitheroe recommends the sprocket and chain and auto wheel.



Mr. Stanbrough's arrangement with ordinary drum and tiller line.

The market offers many kinds of tiller cord, everything from stamped brass chain to bronze rope. This, or galvanized wire rope, is by far best for the cruiser, although braided cotton rope with a bronze wire center is also good.

Ordinary stock quadrants as sold by many supply houses are used to a great extent, but are not as strong and positive in action as the single arm lever described herewith. In this arrangement the tiller rope leads at good angles in a fair line and the ropes do not cross to chafe as on the quadrant.

I have sketched from memory the rig as built on a 43-foot seagoing cruiser which the writer owned a few years ago. This method gave satisfaction under hard usage, was always reliable, and troubleless. The arrangement is by no means new nor is it used entirely on the larger boats, as I have noticed on the Delaware River several smaller cruisers 30-35 ft. using practically the same kind of gear. The dimensions as given on the sketch will probably fit the average cruiser, but the rudder, length of skeg and stock, would necessarily vary to suit the individual boat. At first glance, this gear may seem complicated, but it is far from such. I used a bronze bar 34 ins. long by 3 ins. wide by 1 in. thick with an 8 in. by 1 in. stop cut in one end and a square at the other, to fit on the 2 in. bronze rudder stock. The traveler was made of two bronze plates ¼ in. thick by 2 ins. wide by 9 ins. long (finished) bolted or riveted together at the ends as shown—½ in. holes were drilled in the ends and the 6 in. turnbuckles fitted here, making the taking in of slack an easy matter. A 1 in. bronze bolt and ¼ in. pin completed this part of the gear. The fit of the bolt must be loose to permit the traveler to slide easily. It can be seen from the sketch that with the rudder dead astern the traveler is at the after end of the slot, and when hard over, at the forward end. The pull was straight and positive at all times and the rudder could not be pulled over more than 45 degrees. The towing bitts were so placed as to further secure this, making the backing chain on the rudder unnecessary.

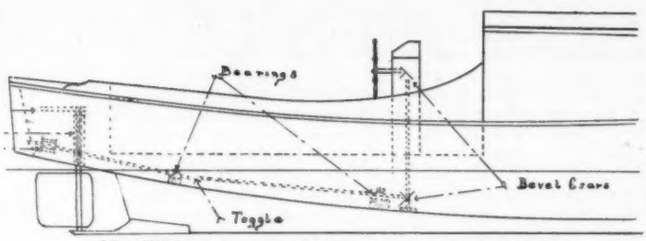
All sheaves were 6 ins. in diameter, bolted to clamp under the shelf, excepting the sheaves on the bulkhead, which were 4 ins. in diameter. The 3 in. fair leaders are not altogether necessary, although their installation is not objectionable. The boat had a cockpit, as most all moderate size cruisers which necessitated the rigging of the line as shown by the cross section. The 4 in. post sheave was placed level with the clamp and the starboard sheave below the companionway door-sill with another 4 in. sheave below the clamp. In a boat with a flush after deck the arrangement would be identical excepting that the starboard sheave would be on a line with the port one and both leading directly to the clamps.

The entire gear was out of the way, although "in sight," the lines and sheaves in the cabin where they could be frequently inspected and oiled. The cockpit seats were hinged, leaving all sheaves and traveler and all but 2 feet of the entire line exposed. The top strake of the sheathing forward of the stern lazy-back was made removable, being fastened with large screws. By running the lines under the shelf on the clamp, the storage space under the cockpit floor was left free for the bulky cans, fenders, tanks, etc.

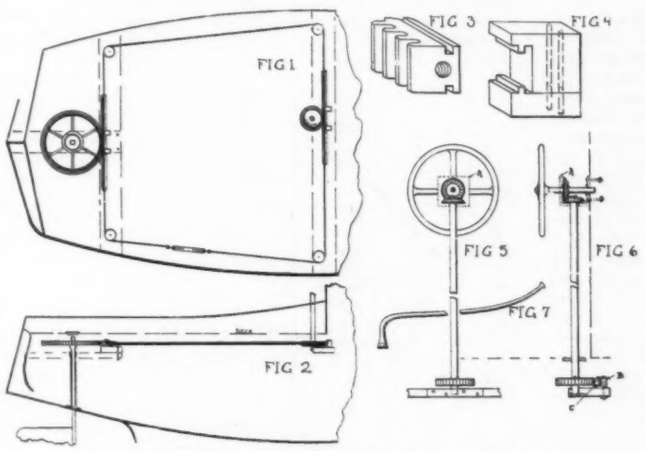
For a steering wheel I had a large ship-shape mahogany and brass affair, and to strengthen the gear at this point a 1½ in. by 6 in. mahogany block was bolted to the cabin bulkhead. A brass collar outside and another brass collar inside completed the outfit.

There is no part of the entire gear that the owner cannot readily purchase or himself construct and the increased satisfaction derived from this dependable arrangement is worth the slight increase in cost—if there is any.

EDWARD E. KRAMER, New York City.



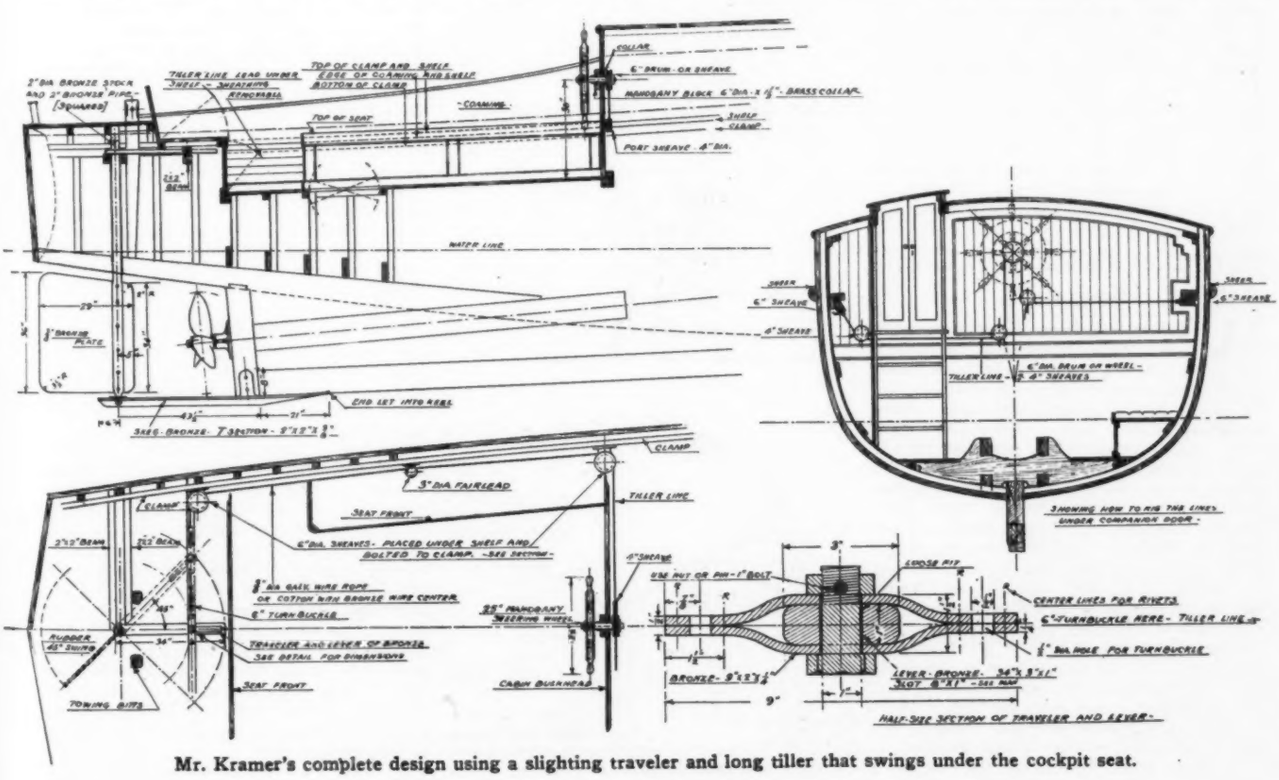
Mr. White recommends the bevel gear and shaft.



Rack and pinion steering gear used by Mr. Andrews.

Quadrant Aft of Rudder Post.

AN outboard rudder hung on the stern post has its advantages, chief of which is ease of inspection, but an inboard rudder like that shown in the sketch is bet-



Mr. Kramer's complete design using a slighting traveler and long tiller that swings under the cockpit seat.

ter protected, in fact has proven to be satisfactory in every way.

The particular rudder shown is on a 30-foot cruiser and is of sufficient size to turn it around in nearly its own length. The post is 1 in. diameter, through which a ⅛ in. slot is cut, which receives the blade of ⅛ in. steel plate riveted in and the whole galvanized.

The lower end of a brass tube screw-threaded at each end, is screwed through the frame of the boat and its upper end passes through a plank fastened athwartships to the frame. Two threaded collars on its upper end, which lock each other together, complete the fastening of the tube. The quadrant is provided with a round hole, which snugly fits the rudder post and is fastened thereto by a ¼ in. tapered pin with a nut on its smaller end. The rudder then cannot drop down and works satisfactorily without the shoe.

The shoe, however, is of importance as a protection both to the propeller and to the rudder. The lower end of the rudder-post rests upon the shoe and a pin through the post is provided as an additional precaution.

Of course a quadrant should be used, as it equalizes the tension on the tiller rope. The quadrant should be *back* of the rudder post instead of in front of it, as is usually the case, because it brings the opposing pulls of the rudder and of the tiller rope on the same side of the rudder post, and because it then lies back out of the way under the after deck in what is otherwise waste space. A hatch in the after deck gives access to the quadrant. Stop locks limit the movement of the quadrant and the rudder.

The tiller rope is of flexible bronze cable and runs uncovered and accessible over pulleys and fair-leaders to an ordinary steering wheel. The initial cost of this cable is high, but it is worth while, as is evidenced by the fact that in this installation the same cable has been in use for eight seasons and is still in good condition. One turnbuckle in the tiller rope is enough to take up its slack.

Any kind of steering wheel may be used. The old-fashioned spoked wheel on a horizontal axis is good enough for most of us and some who have tried the later style smooth rim wheel on a vertical axis, are coming back to the old style again. But one point is important; the helmsman of a small cruiser in a heavy sea is often tossed about severely and must have something to hold on to. That something should be the steering wheel. Consequently it should be heavy enough and strong enough to sustain the weight of his body even when applied to it in jerks. In the installation described, the rudder is so nearly balanced and the ropes run so freely that the wheel may be turned with one's little finger, but this is no excuse for not having a good husky wheel.

Not Yet, Yonkers, N. Y.

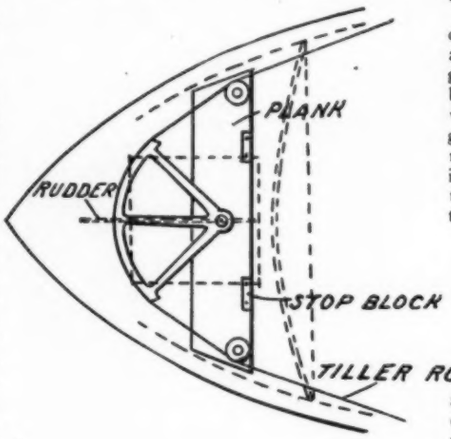
Sprocket and Chain Combination.

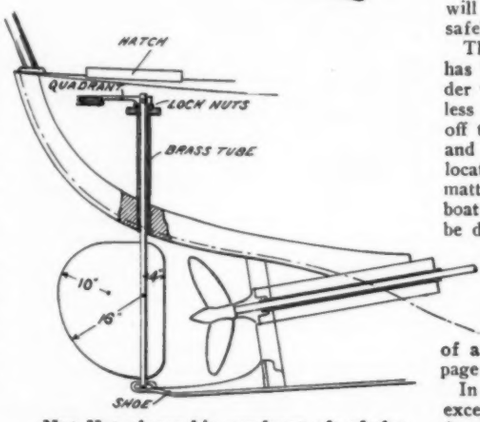
WE constantly hear of motor craft losing races, endangering the lives of their occupants, possibly threatening the safety of neighboring craft through the failure of their steering gears. This seems unnecessary since ample strength in every part is easily obtained and with due care in installing the various parts a successful gear should be the result. The usual form of gear with a spool or drum on the wheel shaft round which the wheel ropes wind and unwind as the helm is shifted one way or the other is open to at least one serious objection. The riding up of these ropes is likely to result in jamming at some critical moment and is a common defect in gears of this type. The ordinary hemp or cotton rope generally used stretches badly and no provision is commonly made for taking up the slack when necessary. The ideal gear is one with no "lost motion" or slack at any point and one which cannot jam under even the most trying conditions.

To begin with, the regular vertical ship's wheel is considered best for cruising craft, although the so-called Auto pattern is sometimes used in smaller boats. The use of the sprocket gear and chain, a mechanical combination made familiar to us by its use on the bicycle and automobile, in place of the winding on the wheel shaft is, perhaps, the best way of overcoming the tendency to jam at this point. A strong steel roller bearing chain is desirable, such as is used on small chain-driven cars. This chain is very easy running and if not exposed to the weather, will last indefinitely. Bronze chain may be had, but is not as strong and wears more rapidly. The sprocket gear, preferably of bronze with cut teeth, should be securely keyed to the wheel shaft. Phosphor bronze wire wheel rope is as near non-stretchable as any material for the ropes themselves and should splice into the sprocket chain at either end, running aft over very large wire rope sheaves and guided by roller fair leaders when necessary. A pair of strong bronze turnbuckles should be spliced into the wheel ropes one on either side so that slack may be conveniently taken up at any time. The wheel ropes aft should run over quarter sheaves to a double grooved quadrant on the rudder post, this device serving to keep the rope under equal tension at all angles of the helm. The rudder head should be squared and an emergency tiller kept at hand to fit on in the event of any mishap to the gear.

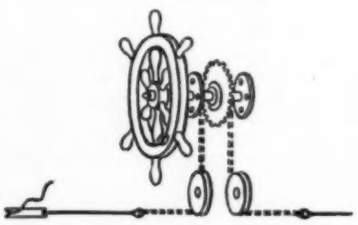
Care should be taken to have all splices and connections of great strength and to allow an ample factor of safety in every part of the gear. A bronze rudder post and skeg should be used, since, while higher in first cost, they will prove economical in the long run. A gear of the type described above is by no means the cheapest which can be devised, but if well put together should last as long as the boat and give the minimum amount of trouble.

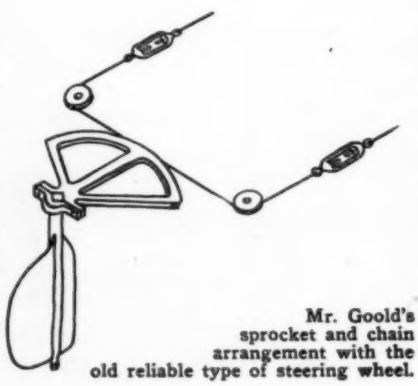
Allan O. Goold, Portland, Me.





Not Yet places his quadrant aft of the rudder post.





Mr. Goold's sprocket and chain arrangement with the old reliable type of steering wheel.

Bevel Gears and Shaft.

THE gear which will be described, is as near "break proof" as anything of the kind can be, and as there is only one part that will ever need any attention, and that part is under the after deck near to the rudder head, to which you will have to have access anyway, it can be safely said that the gear is accessible.

The great trouble with steering apparatus has been that the cable connecting the rudder with the wheel has always given more or less trouble by stretching and then jumping off the sheave in the block, thereby jamming and causing trouble. Usually the blocks are located below decks, so that it is no easy matter to fix the blocks, particularly when the boat is in a tight place, and the work must be done in a hurry. The only cure for this has been that all the blocks and other parts of the gear have been brought up on deck where they were accessible, but where they were in the way and certainly did not much improve the looks of a varnished deck. (See sketch at top of page 37.)

In the gear shown there is no cable at all except a short one from the rudder to a drum immediately beneath it. There are only two blocks, one on each side of the quadrant, through which the short cable runs to the drum on the shaft.

At first glance it might seem that this outfit would be rather expensive, but a similar device installed on a cruiser last year cost exactly $4.50 for material. Of course this does not include either the wheel or quadrant. Bronze steering cable would have cost a little more than this for the usual installation.

The shafting can be either ⅜ or ½ in. steel and the bearings, ordinary hanger journals. The gears can be obtained for about $1 a pair, and should be of a good quality of steel. The universal joint or toggle can be bought from any machine supply store and costs about a dollar. In some boats with very little rise to the after run, it may be possible to run the shaft without any joint, but in other boats it might take two toggles in order to properly install the device.

For a slight additional expense you can do away with even the short piece of cable. To do this get another set of bevel gears, one spur gear, and a rack. Bend the rack around the face of the quadrant, and drop a piece of shafting so that it will mesh with one of the bevel gears on the fore and aft piece of shafting. Fitting the spur gear to the vertical shaft so that it meshes with the rack will give you a gear that will be as sure to work as the sun is to rise.

G. T. White, New York City.

How to Run on Kerosene.

Simple Devices Worth Experimenting With at Least That May Come in Handy When the Price of Gasoline Becomes Prohibitive.

THE PRIZE CONTEST—Answers to the Third Question in the October Issue.

In Two Cycle Gasoline Motors.

THERE are definite conditions governing the use of kerosene which must be attained and kept constant to obtain satisfactory results.

These difficulties are proper vaporization of the fuel. A strong tendency to premature firing with consequent knocking of the engine and loss of power. The sooting and carbonizing of the combustion chambers, valves and spark plugs from deposits caused by incomplete combustion. The leakage of gas past the piston which becoming condensed will destroy the lubrication of the piston, cylinder walls and other working parts in the crank case.

Good fitting pistons and rings are therefore a prime necessity to the use of kerosene.

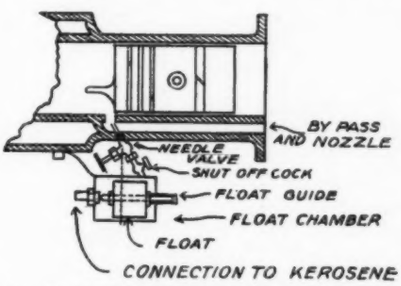
The simplest means of using kerosene is with the 2-cycle motor. A single float feed chamber may be connected by small brass or copper tubing having a ⅛ in. bore direct to one or more cylinders. The connection is made by drilling and tapping a hole in the delivery bypass of the cylinder directly opposite the admission port to the cylinder. A nozzle with a needle valve adjustment being screwed into this hole and connected to the ⅛ in. pipe from the float feed chamber in such a position that the kerosene level will be ⅛ in. to ¼ in. below the nozzle orifice. The nozzle should project about one-half way across the bypass opposite the admission port.

In operation the engine is first run on gasoline through its regular carbureter until the engine is well warmed up, five to ten minutes generally being sufficient. A small valve being inserted in the kerosene pipe between the flood chamber and the nozzle or nozzles in two or more cylinders may then be opened and at the same time the gasoline shut off from the regular carbureter by closing the needle valve. The throttling of the motor and air supply is controlled by the regular carbureter as before. Kerosene is then drawn from the spray nozzle by the induction of the inflowing air from the crank case to the cylinder. The air and kerosene spray impinging against the heated deflector on the piston head causes the kerosene to be heated and vaporized, forming a gas and at the same time mixing with the air. The heat generated by the compression further heats the mixture so that it produces perfect combustion during the ignition period. In motors whose compression does not exceed 40 lbs. little or no trouble will be had from premature firing and perfect combustion may be obtained by proper adjustment of the kerosene needle valve.

In motors with higher compression knocking is liable to occur, due to the high head of compression added to by the increased temperature of the cylinder when operating on kerosene. This may be corrected by increasing the cooling water circulation or by raising the cylinder or cylinders by placing a line under them if they are separate from the crank case or by shortening the connecting rods.

Another and very effective means of preventing premature firing is the introduction of water spray into the cylinder through the bypass in the same manner as the kerosene. This may be easily effected by connecting a second nozzle and float chamber to the water jacket, using a needle valve for close regulation.

Small needle valves and brass piping having a 1-16 in. bore may be obtained from dealers in brass tubing and steamfitters' supplies, which are suitable in making nozzles. The float chambers can be constructed from sheet brass, using large cork floats with vertical valve spindles seating in ⅛ in. brass connections at the top of the chamber and guided by a continuation of the valve spindle through



Mr. Paddock's attachment for a two-cycle motor.

the cork at the bottom in a small piece of tubing. This simple construction for a kerosene fuel and water attachment is shown in the accompanying sketch.

A very small amount of water is sufficient to produce smooth running of the engine. The water is vaporized in the same manner as the kerosene, damping or stopping premature firing. The water is decomposed during the combustion into hydrogen and oxygen, which unites during the latter part of combustion with free carbon otherwise expelled through the exhaust or deposited as soot in the cylinder. This action of the water adds to the power of the engine and gives a freedom from carbon deposit.

J. R. Paddock, Jr., East Orange, N. J.

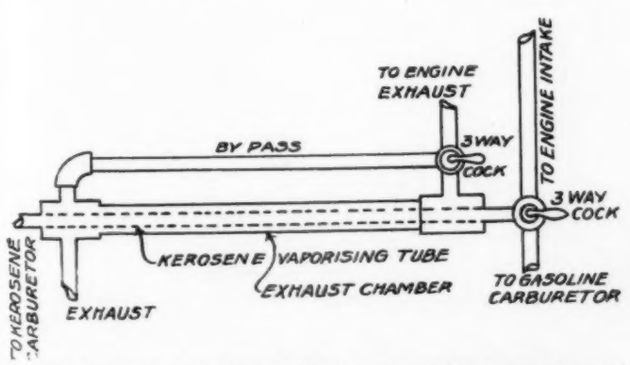
In Four Cycle Gasoline Motors.

THE application of kerosene to the 4-cycle engine is necessarily more complicated than in the 2-cycle. The method of heating and vaporizing the kerosene is usually that of exhaust heated vaporizers.

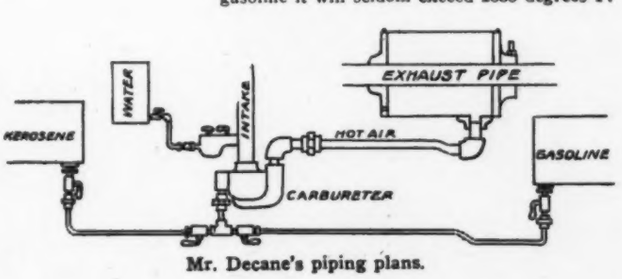
A temperature of 250 to 300 degs. Fahrenheit is necessary to properly convert the kerosene to gas. In pursuance of experiments to obtain this result I have found the following to be an efficient and inexpensive method.

To the main outlet of the exhaust pipe or manifold as close to the engine as possible to connect a 3-way T reducing connection. The exhaust to enter at right angles to the flow through a short length of pipe 18 to 24 ins. long and from ½ in to 1 in. larger than the engine exhaust pipe. Through the end of the T in line with the large pipe run a pipe of the size of the inlet from the carbureter. This pipe is brought out at the end of the large pipe through a 4-way T reducing connection and connected to the kerosene carbureter, the exhaust being connected from this T at right angles and led to the desired point of outlet. The other end of the carbureter pipe being connected to the 3-way cock between the gasoline carbureter and engine inlet. The remaining openings in the T's a bypass pipe and 3-way cock of the same size as the engine exhaust outlet pipe or manifold are connected to shunt port of the exhaust gases when necessary to prevent too high a temperature of the kerosene mixture which would cause premature firing. The accompanying sketch showing the connection. The operation is as follows: the engine is first started on gasoline and run until the interior pipe in the exhaust vaporizing chamber has become well heated. Then the 3-way cock connecting the carbureter may be turned on to the kerosene vaporizer and the motor will then operate on the kerosene. The application of water is particularly desirable with a 4-cycle engine and may be connected with the inlet pipe from the water jacket using a small needle valve and 1/16" piping for a nozzle. A float feed chamber is not necessary as close regulation of needle valve will prevent an excessive flow and there is no possibility of excess water entering the engine or crankcase as would be apt to occur with the 2-cycle engine if no float regulation were used. By the regulation of the bypass on the exhaust heater and water injection, perfect combustion and smooth running will be accomplished. In both two and four-cycle types it is desirable to maintain the cooling waters in the jacket at a temperature not exceeding 150 degrees F. This may be accomplished by a plentiful water circulation and a valve on the suction side of the water pump by which the amount of flow can be regulated.

The temperature of the burning gas from kerosene is much higher than from gasoline, being about 3000 degrees F., whereas with gasoline it will seldom exceed 2000 degrees F.



For the four-cycle motor Mr. Paddock recommends a more elaborate arrangement.



Mr. Decane's piping plans.

It is therefore to be seen that a plentiful supply of cooling water is essential and a means for its control. Excessive temperatures of cooling water in the water-jacket above 150 degrees F. tend to promote premature firing.

In conclusion it is well to say that in attempting to use a fuel of the complex nature of kerosene in the ordinary gasoline engine the foregoing stipulation and regulations would be fully observed and very satisfactory and economic running can be obtained as the result.

J. R. Paddock, Jr., East Orange, N. J.

Change Soon Pays for Itself.

THE difficulties of using kerosene as a fuel for the ordinary gasoline motor are (1) that is impossible to start the motor with kerosene without first heating it; (2) difficulty of vaporizing it; (3) great heat produced in combustion chamber; (4) liability of carbon deposits; and (5) offensive odor of exhaust.

We will now consider how these difficulties may be overcome.

While gasoline may be vaporized at ordinary temperatures, kerosene requires to be heated to from 110 degs. to 150 degs. Fahrenheit before it will give off an ignitable vapor.

Our best source of heat on the ordinary gasoline motor is the exhaust pipe. We can surround it with a chamber made of large pipe or heavy sheet iron fastened to an iron flange at each end and held in place on exhaust pipe with set screws. One of these flanges should have a number of small holes drilled in it. Total area of these small holes should about equal area of carbureter intake. At end of chamber opposite end which has small holes drilled in it, should be placed a flange tapped for pipe. Pipe should be run from here to air intake of carbureter. This is called hot air pipe.

The auxiliary air intake of carbureter must also be connected to this hot air pipe. As drawing in cold air through auxiliary valve would lower temperature.

There are carbureters on the market which have auxiliary air intake closed so that auxiliary air is drawn from air intake. This is almost a necessity in cold weather with gasoline, as hot air must be used to prevent frosting.

An extra tank should be provided so as to have an extra one for kerosene and one for gasoline. The two pipes from tanks can be run together at carbureter and each provided with a shut-off. Gasoline is to be used only for starting, until we get sufficient heat to vaporize kerosene (110 to 150 degs.) and then the kerosene may be turned on and the gasoline shut off.

If engine is not working very hard it may not get excessively hot and pound, but if it does, water may be introduced into the mixture. This may be accomplished by putting a water attachment on intake pipe to engine between carbureter and engine. This is virtually a small carbureter without any auxiliary air and amount of water may be adjusted by needle valve and throttle valve on same. Very little water is required and a gallon will last for a long time. The water retards the flame propagation in the early part of the stroke, and is also supposed to be decomposed into hydrogen and oxygen by the intense heat and pressure taking part in the combustion later.

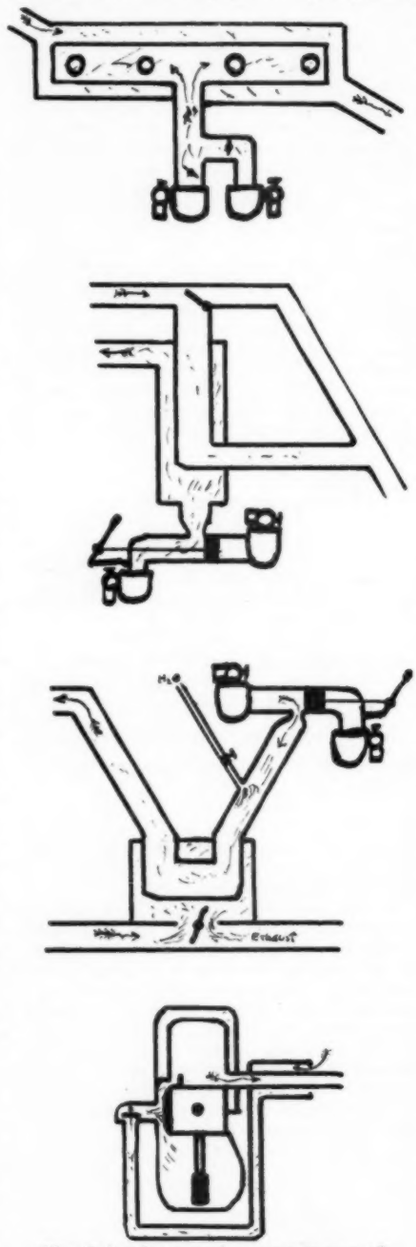
Carbon deposits and odor will be taken care of if mixture is adjusted properly. Of course mixture should not be allowed to get below 110 degs. after it leaves carbureter, or condensation might take place.

Kerosene is ten per cent. heavier than gasoline and costs about one-half as much and the extra cost of installation is certainly worth while.

H. C. Decane.

Water Injected into Cylinder.

THE requisite heat for the starting may be obtained from the hot exhaust of the motor itself, but obviously some other method must be resorted to in starting, till the motor has warmed up. The initial heat may be supplied by a blow-torch, but the quickest and most satisfactory system is to provide a small gasoline carbureter for starting purposes. The tank supplying this need not hold more than a gallon or so, for, after a few moments' running, the motor may be supplied from the regular kerosene vaporizer or carbureter.



Mr. Culver's several arrangements of starting and heating apparatus.

In the accompanying sketches are shown several arrangements of starting and heating apparatus. In many cases it is best to provide the latter with a bypass valve, to prevent excessive preheating and expansion of the fuel charge. Two-port two-cycle motors in which the incoming charge impinges on the hot cylinder wall, are found to operate well by merely heating the air before it enters the vaporizer.

Another difficulty encountered in using kerosene is the strong tendency of this fuel to foul the motor and spark plugs with a soot deposit. Although maintaining the vaporizer temperature up to that previously mentioned will partly overcome this the writer has had best results with a gasoline motor, using kerosene into the inlet manifold which a very little water was injected to just moisten the fuel charge. Carbonization was greatly reduced, and the motor ran smoother and without loss of power.

An ill-smelling exhaust from any internal combustion motor may be taken as an indication of incomplete combustion, but the presence of the heavy carbon compound in kerosene makes its exhaust rather more pungent than that of lighter oils. In motor boat work especially, when under-water exhausts are fitted, this objection is not of great weight.

It is advantageous to use a high compression in kerosene motors, but the difficulty in fitting and cooling filler plates in the combustion chamber usually outweighs the advantages gained in the small motor.

E. P. Culver, Schenectady, N. Y.

Employs a Poppet Suction Valve.

KEROSENE cannot be used in the ordinary gasoline carbureter because the rush of air past the needle valve is not sufficient to pick up and finely divide heavy oils. The natural method of overcoming this is to either heat the fuel or air, or to make use of a number of small needle valves.

The latter method at once meets the serious objection of increased capillary resistance to the oil. Since the volume of a gas increases with its temperature, the former method has the objection that the weight of fuel taken into the cylinder at each stroke must be diminished, with a corresponding decrease of power. Also oil vaporized by heating outside of the cylinder is easily condensed on the cylinder walls and the drops of oil thus deposited cause a missing and after combustion.

In spite of all of these objections there can be a very simple mixing valve made for attachment to the ordinary gasoline engine which will give very good satisfaction. It should consist solely of a poppet suction valve, having a number of holes or orifices in its seat. This seat should be so constructed that part of the orifices connect with a small kerosene reservoir and part with the circulating water after it leaves the engine. The kerosene reservoir must give about a three-inch head and have a valve for regulating its flow. A small fuel pump must be provided to pump the kerosene from the tank through coils around the exhaust pipe to the reservoir.

The action of such a device is apparent. At the suction stroke of the engine the poppet valve is lifted, allows an inrush of air and also uncovers the many orifices in its seat. The air picks up the finely divided spray of kerosene, vaporizes and thoroughly mixes with it, and perfect combustion results.

That the actual success of this device is not contrary to the theory of capillary resistance is apparent when it is remembered that the viscosity of a liquid is proportional to its temperature.

In an experiment it was found that the amount of kerosene flowing through one of these orifices in a given period almost doubled for 100 degs. Fahr. raise in temperature. The best results are obtained when the fuel is fed to the reservoir at a temperature of 200 degs.

A few points should be remembered in the use of this or any device for burning heavy oils in gasoline engines. Gasoline must be used for starting. The cylinder should be as free of pockets as possible. A strong suction is necessary, but too much decreases the volumetric efficiency with a corresponding decrease of power. For engines with cylinders above 6 ins. in diameter water injection is necessary. The water should be warm and just enough used to prevent pounding.

H. A. Robinson.

Up-to-date Practice in Motor Boat Design

During the year 1912 the progress made in the design of motor craft has been a most marked one, keeping pace with the great development made in the internal combustion engine. Designers and engineers alike have been wide awake to the problems and opportunities before them and have turned out products of a higher class than anything heretofore shown. The plans shown herewith in this department represent the most up-to-date designs that it was possible to obtain from the foremost naval architects of this country and give an excellent idea of the 1913 practice. Editor.

A 60-Foot Houseboat.

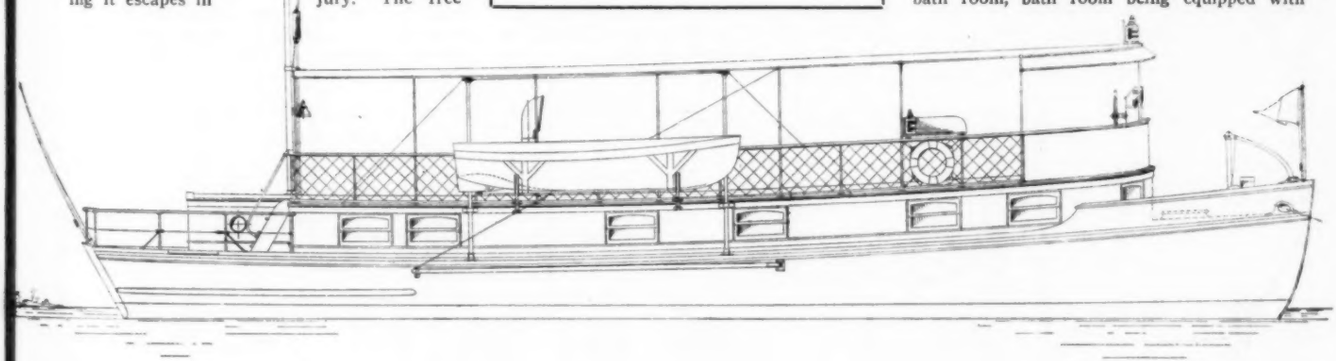
THE plans below are of a shoal draft houseboat designed by Swasey, Raymond & Page, Incorp., of Boston for Mr. Charles W. Lee of New York, for general use the year 'round; in the summer time in the vicinity of Long Island Sound and in the winter in Florida.

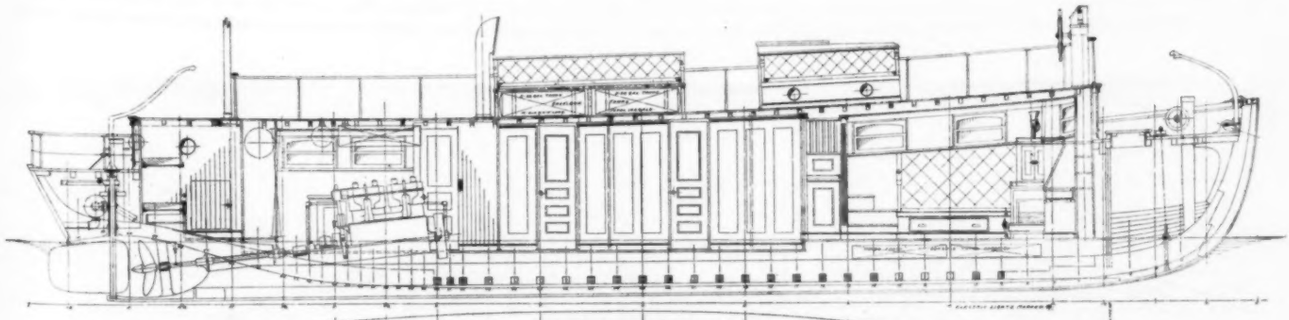
The draft of the vessel has been restricted to 3' on account of the shoal water in Florida. The lines, however, have been so modeled that she will possess good sea going qualities as well.

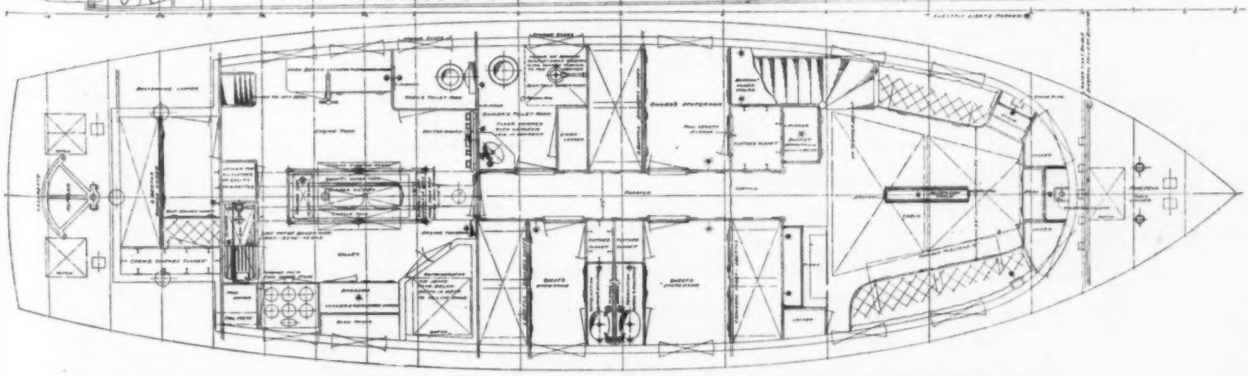
She is of the regulation tunnel stern type in which the propeller is protected and is so arranged that in case of grounding it escapes injury. The free board has been kept higher than in a great many boats of this type, also the house, which gives a more shippy appearance, and instead of using circular ports, windows similar to those in a house have been used, which with the skylights and ventilating cowls will give good light and ventilation.

Length over all	60'
Length waterline	56' 4"
Beam	17' 1½"
Draft	2' 10"
Make of Engine—Twentieth Century	
Horsepower	40
Speed	8 miles

As the boat has been intended to live upon the rooms below were made large and roomy. The cabin is in the forward part of the boat which is generally the most pleasant part and is to be used as a living room. A piano, side board, open grate and all other features which will make it a desirable place to sit in, have been installed. A center line passage leads from the cabin to the engine room and galley. On the other side of this passage are staterooms and bath room, bath room being equipped with







The 60-foot motor houseboat designed by Swasey, Raymond & Page for all-'round use on the Atlantic Coast.

shower and all other fixtures.

Aft of this is a room for the crew and all gasoline and water is carried on the upper deck, thus insuring a gravity flow and absolute safety.

The upper deck is covered with an awning and curtains on the sides, and will serve as an outdoor living room. The boats steers from the bridge at the forward end of this deck. The boat will carry one power tender and one life boat. She will be lighted by electricity, have hot and cold running water and all other things to make her an up to date house boat.

Her speed is 8 miles per hour.

A Floating Research Laboratory.

A Specially Equipped Laboratory for Studying Oyster Growth Which Is Maintained by the New Jersey State Board of Health.

THE boat shown below was built at Camden by the Mathis Yacht Building Co., somewhat on the houseboat type with which they have been so successful. Exceptional accommodations are had for its size. She is 42 feet long and 12 feet 6 inches wide, with a draft of 2 feet 6 inches. The accompanying picture shows that cabin house extends the full width of the boat and for nearly her entire length. The large windows give very fine light and ventilation for the work that is done. The raised deck made by the cabin roof is an excellent feature, giving large deck space and a wide range of vision.

The boat makes a speed of 8½ miles an hour with a 16-18 h.p. Standard engine. This is very good speed for a 40-foot boat of such wide beam and heavy construction.

It is expected that this boat will be in active operation during seven or eight months of each year for several years to come, and that bacteriological and chemical examinations of the water in which the oysters are grown, examinations of the oysters themselves, and sanitary surveys of the watersheds of streams in which oysters are grown or laid out will be made.

It was most advisable to carry the laboratory to the field of operation, as the investigations, being of a bacteriological nature, must be made promptly after the samples are collected, and the difficulty of transportation of samples from isolated points like Maurice River to the laboratory at Trenton have heretofore prevented the securing of results which were altogether reliable.

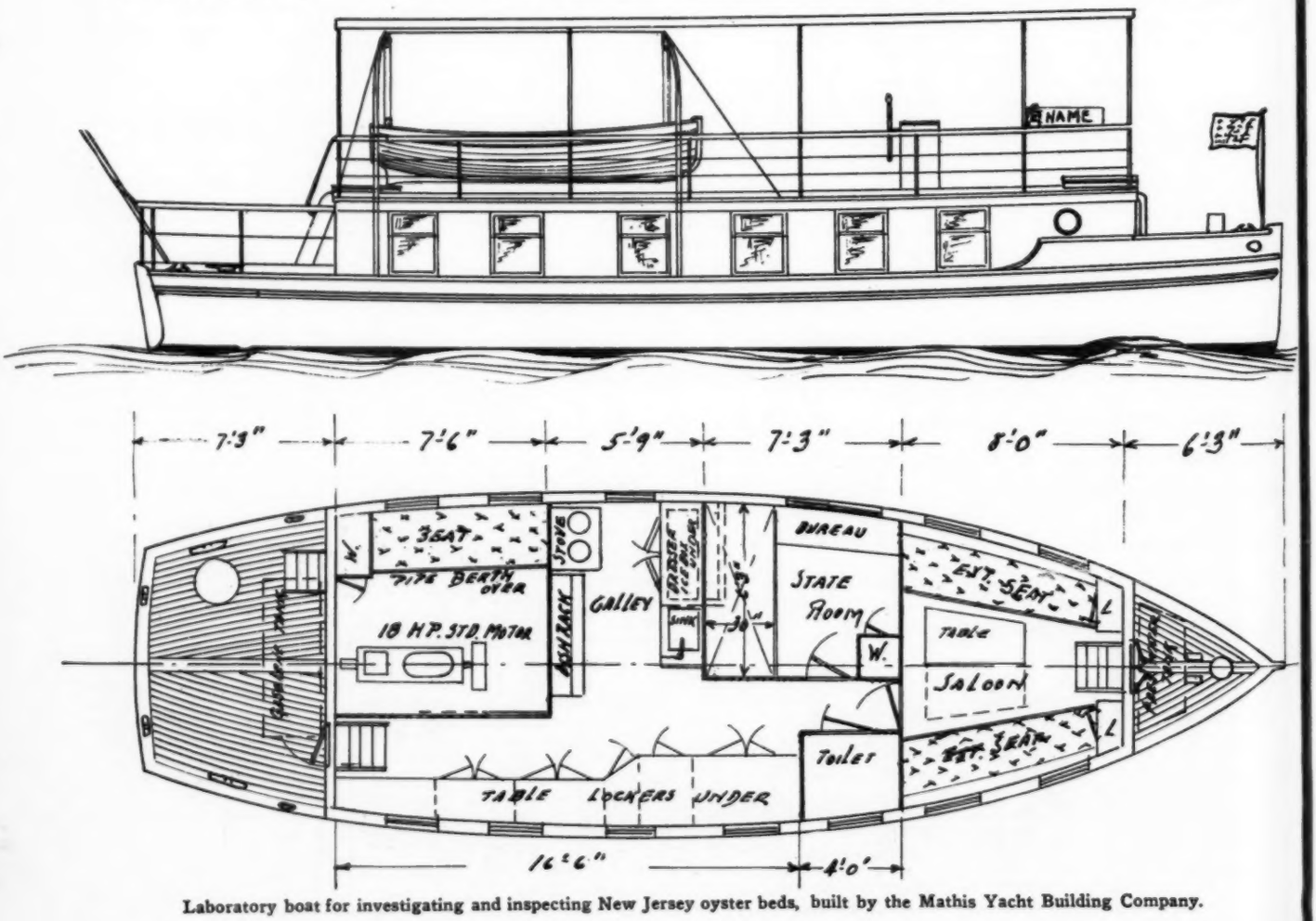
Such a project as this which the State of New Jersey has launched should be welcomed by the entire oyster industry. Much prejudice against the oyster now exists, which, to a large part of the growers and dealers is unjust, and which, through enlightenment by the State, can be dissipated.

It is the public's ignorance of conditions which keeps the oyster from being a far more popular dish than it now is.

Most oysters are fed and fattened on grounds apart from where they were planted, as they will grow in many places where they will not breed. The spawning grounds must be very favorably located, as the spawn of the oyster is a delicate thing and is a helpless prey to many enemies. The oyster spawns in May and June, and if the water is too hot or too cold the spawn will not survive.

Some oyster growers believe that the shock of the too hot or cold bath kills the spawn when it is first ejected from the seed oyster. It is supposed that this spawn floats about in the water for a time where the male and female come in contact and grow. As they grow and become heavier they finally sink from their own weight and attach themselves to whatever they rest upon. This is why the oysterman throws overboard the bushels and bushels of shells each year, so that the bottom of the spawning grounds will be covered, affording a clean, hard surface for the infant oysters' home, free of all other animal life. The young oyster, or spat, would soon be destroyed if it alighted in mud or seaweed or old shells by the animal life abounding under such conditions. Of course, as the oyster grows it becomes hardier, and is finally protected by its own shell. Then, when they have reached the proper size, they can be dredged up and replanted in less favorable places.

Many young oysters are shipped from the Atlantic coast to the Pacific, to be there fattened and placed on the market to delight the palate of the epicure. Some oysters are fattened quickly by a process called "drinking." They are made to "drink" by being

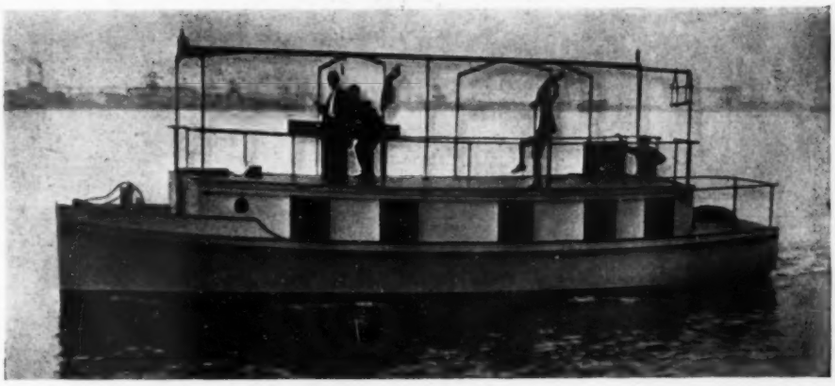


Laboratory boat for investigating and inspecting New Jersey oyster beds, built by the Mathis Yacht Building Company.

placed for a short time in fresh running water.

The reports of experiments made on the oyster inspection boat described here gives definite knowledge of where the conditions for breeding, growing and harvesting the oyster are best.

This simply shows another use for the gasoline motor in an industry which has already been greatly influenced by it. The gasoline engine has revolutionized methods and greatly stimulated the oyster trade in every branch. The motor boat now carries the empty shells to the oyster beds, where they are scooped overboard. It is used for planting the young oyster, or spat; for towing the big mops back and forth over the beds to rid them of stars, as the starfish are called; it is used for dredging up the oysters either for replanting or marketing, and it carries them to market.



New Jersey State Board of Health's floating laboratory has much the appearance of a modern houseboat.

Large dredges which were originally steam boats are rapidly being changed into gasoline boats.

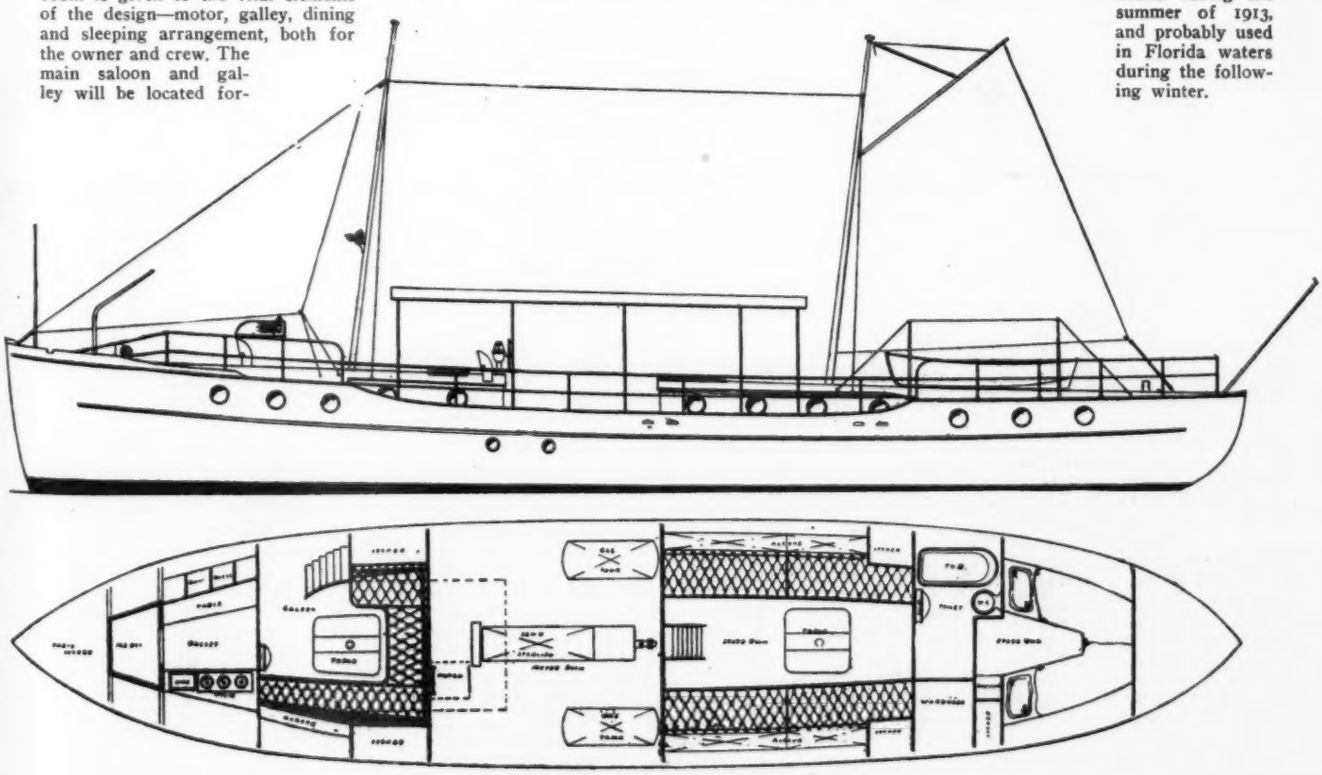
The old oyster sloop which used to tack back and forth over the beds, sooner or later getting a cargo, and arriving in port some time, according to luck and good management, has either been converted into an auxiliary or, as is frequently the case, replaced by the staunch little motor boat.

A Racine Sixty-Five Footer.

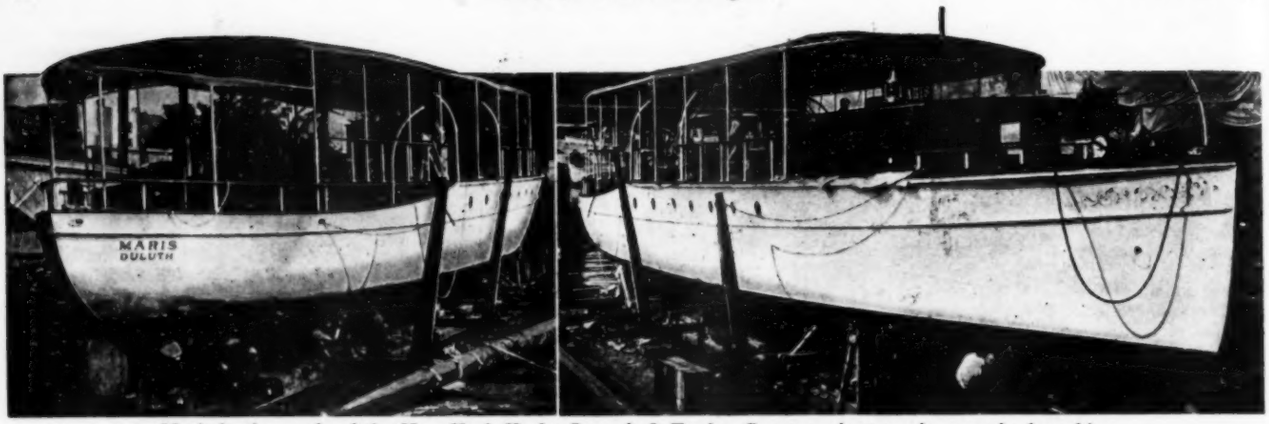
The Design of Medium Sized Cruiser That Is Becoming More and More Popular Every Year.

THE accompanying drawing is a 65-foot cruiser designed by the Racine Boat Co., for Mr G. H. Chandler, of Cedar Rapids, Iowa, and now under construction in their factory at Racine, Wis.

Comfort and seaworthiness are the keynote of the whole design. The principal dimensions are: Length, 65 feet; beam, 13 feet; draft, 3 feet 9 inches. The 13-foot beam permits of unusually spacious accommodations. The hull will be heavily constructed with white oak keel and ribs, yellow pine stringers and clamps. The planking will be 1¾ inches in thickness, of oak and cypress, all copper riveted to the frames. The decks are to be finished in white pine, and the deck erection and deck houses will be of solid mahogany. In the layout much room is given to the vital elements of the design—motor, galley, dining and sleeping arrangement, both for the owner and crew. The main saloon and galley will be located forward, handsomely finished in solid mahogany, with companionway on the starboard side. The engine room will be just forward of amidships, and will be divided with two watertight bulkheads, with entrance through a hatch in the trunk cabin roof. The engine room will be equipped complete with a storage battery electric dynamo, four seamless gasoline tanks of 160 gallon capacity, each of the Janney, Steinmetz & Co. make, and will be installed two on each side, as shown, together with the necessary oil tanks. There will also be two pipe berths to accommodate the crew, with toilet, work bench, tool lockers, etc. The engine will be a 60-h.p., 6-cylinder, 4-cycle Heavy Duty Sterling, with their regular equipment, which will give the craft a cruising speed of 10 miles per hour. The after cabin will be furnished in solid mahogany and will be divided by a stateroom in the stern, with a toilet and large wardrobe just forward of these. Toilet room will be equipped with Sands marine fixtures, including closet, lavatory and bath tub. Forward of the toilet is the main stateroom, which will be fitted with transom berths on each side to accommodate four persons, table, lockers, etc. Companion stairs will lead to the bridge deck forward. The deck arrangement will be as shown, including all equipment necessary for a craft of this type, together with an awning over the bridge deck, two spars and sails. There will also be a searchlight arranged on the forward cabin roof. This cruiser will be used on the Great Lakes during the summer of 1913, and probably used in Florida waters during the following winter.



Double cabin design by the Racine Boat Company.



Maris in the yards of the New York Yacht, Launch & Engine Company just previous to the launching.

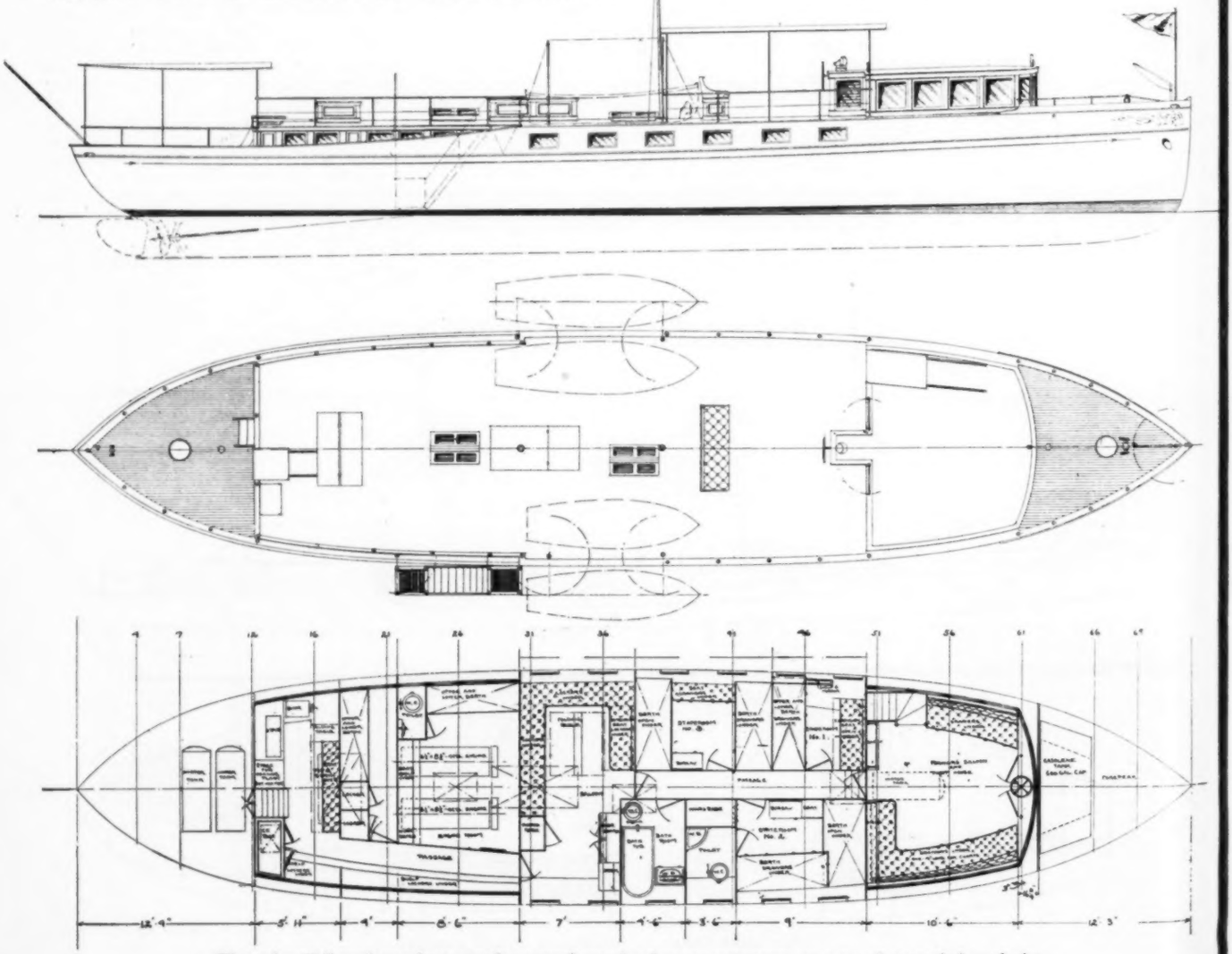
A Shoal Draft Southern Cruiser.

An Excellent Type of Boat Recently Built by the New York Yacht, Launch & Engine Company, With Well Planned Below Deck Arrangements.

THE accompanying plan and photographs show the 77' x 16' 6" yacht Maris, built and designed by the New York Yacht, Launch & Engine Co., for Mr. W. H. Cole, of Duluth, Minn.

The Maris is an exceptionally fine cruiser for southern waters, having a draft of 3' 6" and large roomy deck. The accommodations for the owner and crew are very commodious and handsomely appointed.

The deck-house, which is low, is large and roomy on the inside and makes a comfortable living room. Aft of the deck-house below are the owner's quarters which consist of the owner's stateroom on the starboard side, having large double berth with bureau and clothes locker, and private toilet attached. On the port side, opposite owner's stateroom, are two private staterooms, each having two single berths with bureau and clothes lockers. The bathroom is aft of the owner's stateroom on the starboard side. The dining saloon extends the full width of the boat about amidships, and is very large and roomy, having large buffet and linen locker. At the after end of the dining saloon is located a steel bulkhead, and aft of the steel bulkhead is the engine room in which are located the two 45-h.p. 20th Century Motors.



The 77' x 16½' cruiser whose good proportions give her an enormous amount of room below decks.

A 33-Foot Family Cruiser.

A Boat with Accommodations for Six at a First Cost of Only $1800.

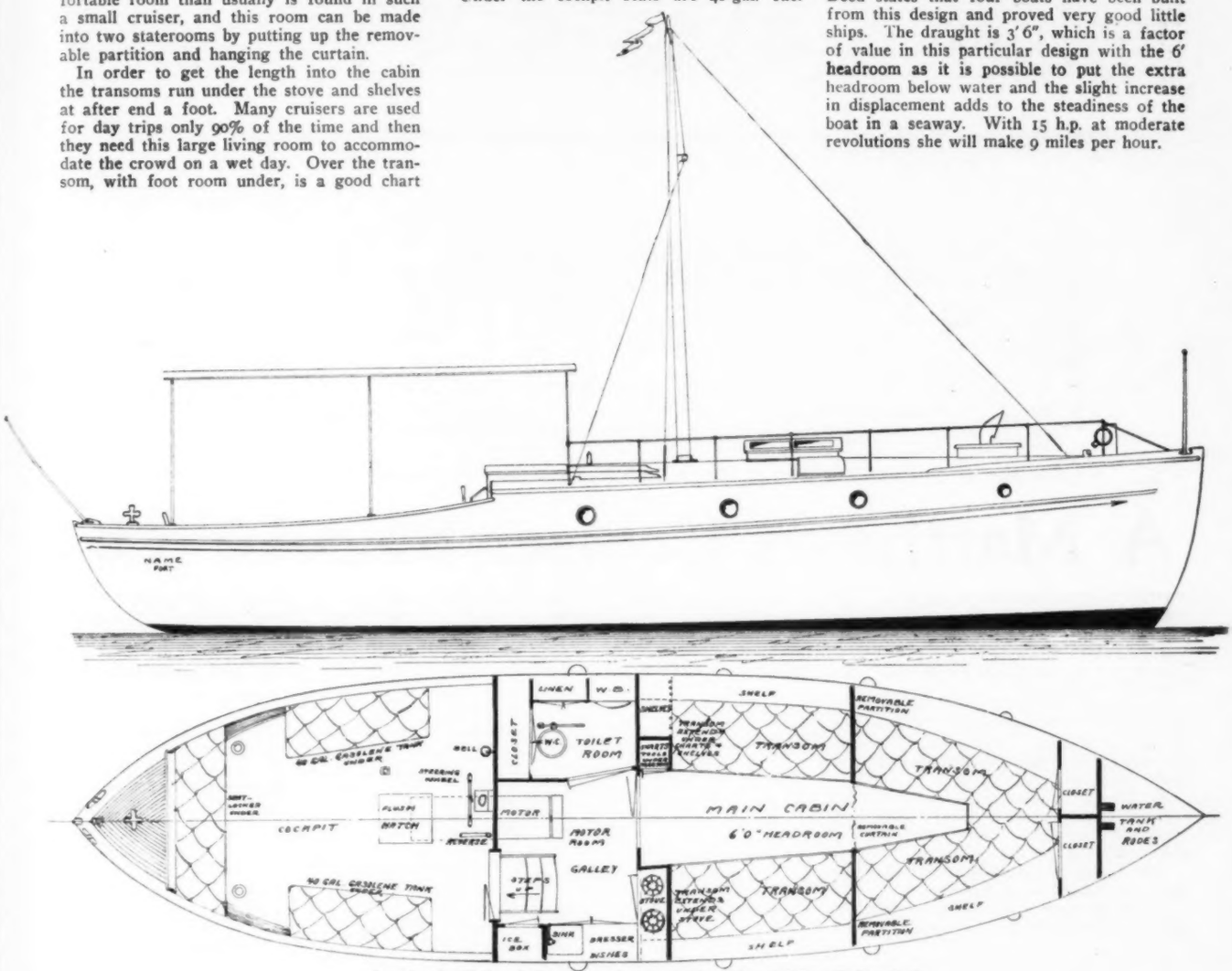
THIS length is a popular one for an inexpensive family cruiser for all weather. Such a boat involves an outlay of only about $1,800 and offers living quarters for four to six people, full headroom, a good-sized cockpit, and all the usual features.

There are one or two points about this particular 33-footer which are of great value; one is the extra long cabin with two 6' transoms on each side. This makes a larger, more comfortable room than usually is found in such a small cruiser, and this room can be made into two staterooms by putting up the removable partition and hanging the curtain.

In order to get the length into the cabin the transoms run under the stove and shelves at after end a foot. Many cruisers are used for day trips only 90% of the time and then they need this large living room to accommodate the crowd on a wet day. Over the transom, with foot room under, is a good chart locker and directly under in the space under the transom is a tool locker. The galley is well arranged and the toilet room is big enough to turn around in.

Under the cockpit seats are 40-gal. fuel tanks set on the cockpit floor so that in case of possible leak fuel would go overboard through the scuppers provided. The cockpit is 9½' long.

The designer, Wm. J. Deed, Jr., of Boston, Mass., has provided safety when going forward and for the crowd on the cabin top on a rough day, and this railing does not show badly on the boat either. The use made of the inches in this design is marked and Mr. Deed states that four boats have been built from this design and proved very good little ships. The draught is 3' 6", which is a factor of value in this particular design with the 6' headroom as it is possible to put the extra headroom below water and the slight increase in displacement adds to the steadiness of the boat in a seaway. With 15 h.p. at moderate revolutions she will make 9 miles per hour.



A 32' 10" x 8' 4" x 3' 4" cruiser from the boards of Wm. J. Deed, Jr.

A 65-Footer for Gulf of Mexico

DESIGNED for use in the Gulf of Mexico, with home port at Vera Cruz, the husky little ship at the top of the next page shows features at once unique and full of common sense. The designer has combined a knowledge of what is needed in a seagoing craft with an appeal to the owner's sense of what is due him in the way of accommodation and the result is a craft capable of going anywhere her fuel supply will carry her with the greatest of comfort, both on deck and below.

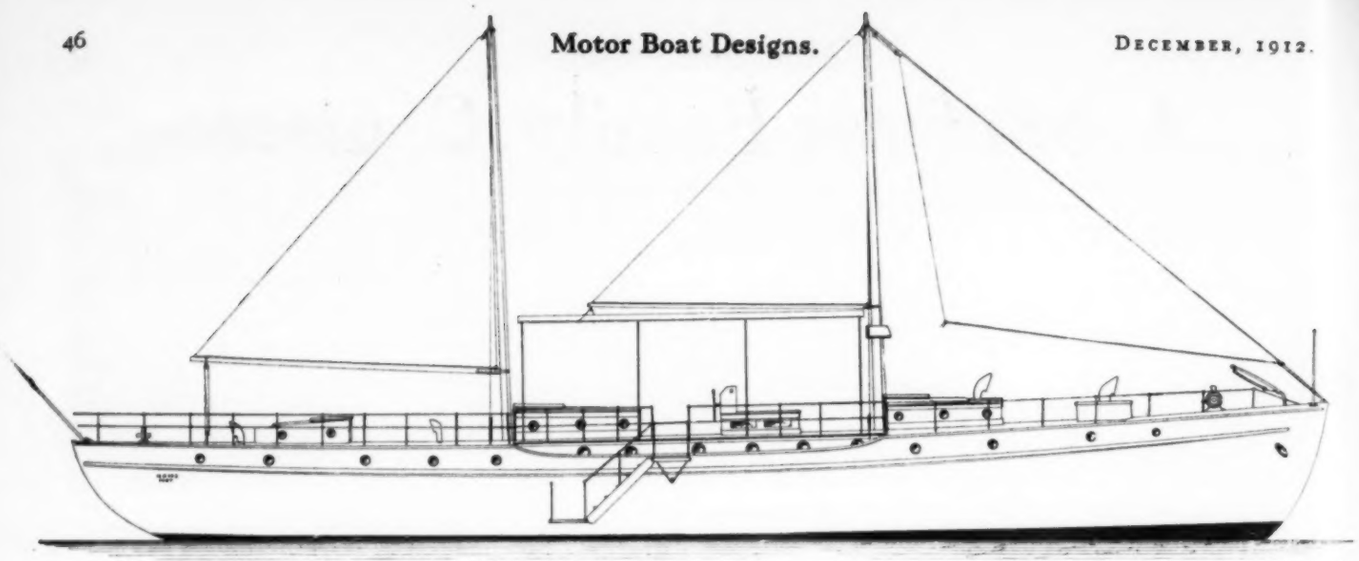
In the majority of cruisers the owner's room is way aft, while the dining saloon is forward, necessitating going on deck to pass from one to the other. Likewise the crew occupies the airiest section of the boat, and after they and the galley and the motor room get the air it is passed on to the owner's party. Not so in this boat, where Mr. Deed has reversed the usual order of things, and provided cool, roomy quarters for the owner and his party, while access to deck and to saloon and toilet rooms is extremely convenient from any point.

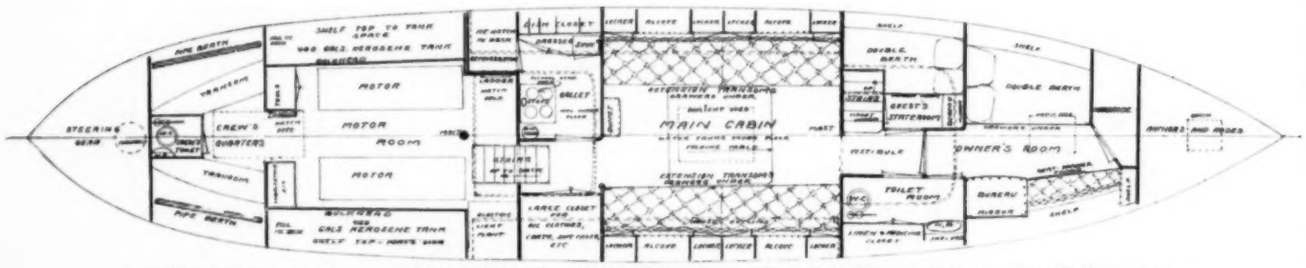
The arrangement for hatchways provides for efficient ventilation as they open fore and aft, and in bad weather being located near the center line of the ship they can remain open without shipping water, if the sail heeled her over on wave slopes.

The flush deck gives strength, maximum deck space, maximum room below, and will permit the boat's being driven through anything with hatches closed. The sail plan is sufficient to steady in a seaway, the masts being stepped on the keel and the light boards are lashed high on the sidestays so as to be visible at greater distance.

The convenience and safety of the quarters is worthy of study. No galley in the engine room, no crew in the engine room; these are both factors of safety.

The motors are 24 h.p. heavy duty kerosene motors and together will drive the boat 10 miles sustained sea speed. There is a good depth and deadrise throughout, which aided by a very heavy hull will reduce vibration, strains, etc., to a minimum. The draught limit of 4' 6" was made necessary by occasional trips up the Mississippi River. The headroom throughout is 6' 4". The dimensions are 65' 9" over all, 13' 2" beam and 4' 6" draft. This design should appeal to those who need a deep sea cruiser in which they get the best of the boat for their own use.





A cruiser 65′ 9″ x 13′ 2″ x 4′ 6″ designed by Wm. J. Deed, Jr., for a Hannibal, Mo., yachtsman, described on page 45.

A Matthews Cruiser 85' x 15' x 6'.

THE boat shown below is the sixth of the well-known Dolph type which has proven to be so popular among yachtsmen. The length has been increased to 85 ft., in order to provide for two extra staterooms, and larger crew accommodations.

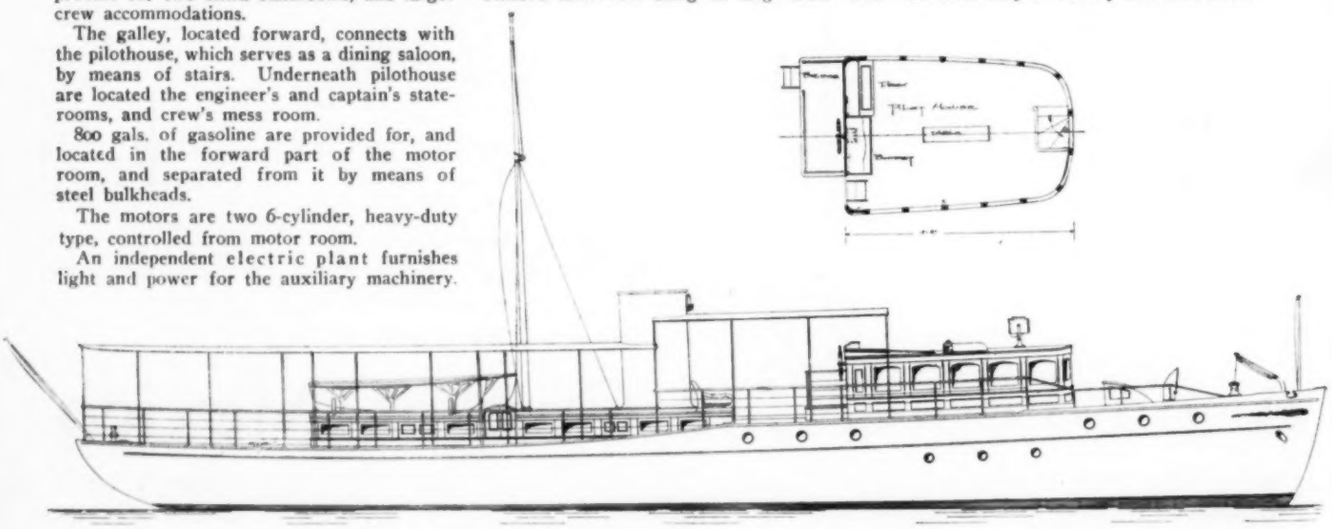
The galley, located forward, connects with the pilothouse, which serves as a dining saloon, by means of stairs. Underneath pilothouse are located the engineer's and captain's staterooms, and crew's mess room.

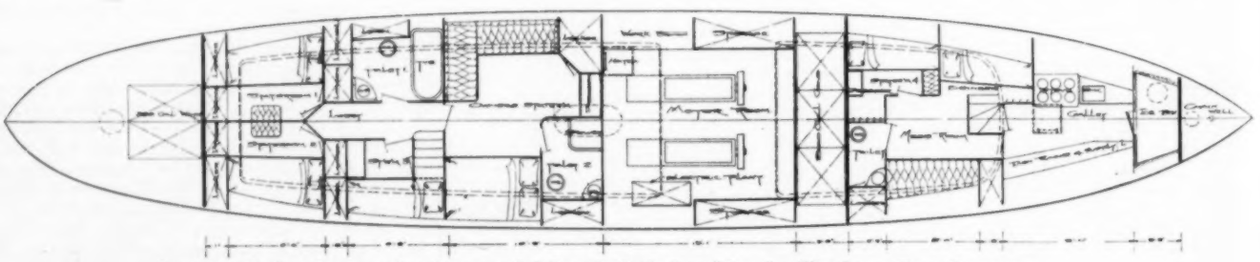
800 gals. of gasoline are provided for, and located in the forward part of the motor room, and separated from it by means of steel bulkheads.

The motors are two 6-cylinder, heavy-duty type, controlled from motor room.

An independent electric plant furnishes light and power for the auxiliary machinery.

The owner's quarters are separated from the balance of the boat by means of a watertight steel bulkhead, and consist of three staterooms in addition to the owner's room, the owner's stateroom being of large size. The owner's toilet, located in this stateroom, is equipped with a shower bath. The after staterooms are well ventilated, and amply provided with locker space. Ten people in addition to the crew may be readily accommodated.

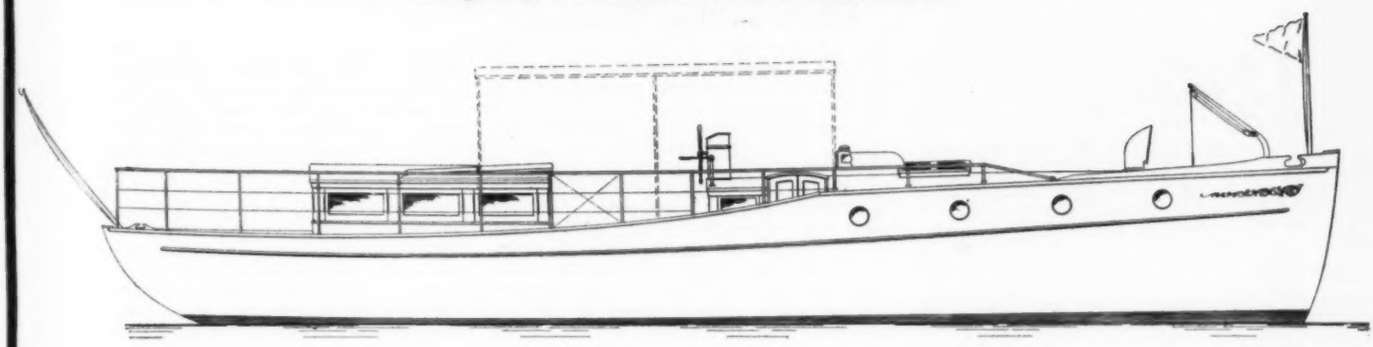


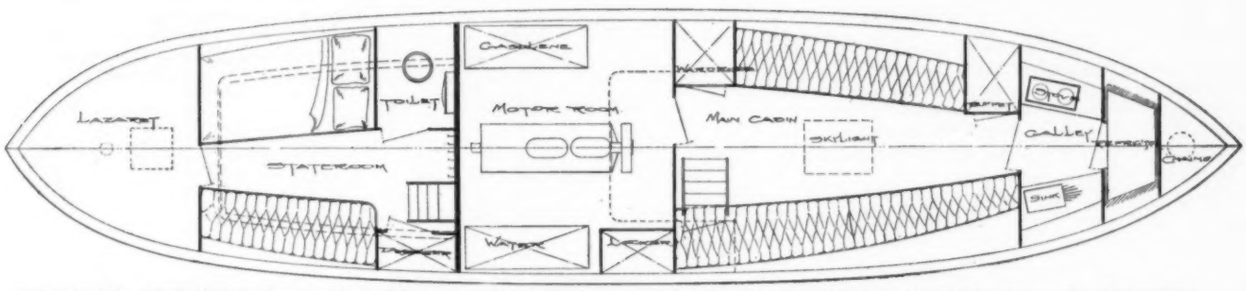


A cruiser 85 feet long, 15 feet beam and 6 feet draft designed by the Matthews Boat Company.

A Popular Medium Size Cruiser.

Length 45 ft., Beam 10 Ft., Draft 3 ft.





In a 45-footer the above design is a most satisfactory and popular one and has been well worked out by the Matthews Boat Company, and described below.

ONE of the features in the design shown above is the bridge amidship, which permits of easy handling of the boat by a single operator, as all the motor controls are brought alongside of steering-wheel. Steering and maneuvering the boat is made considerably easier, there being no raised deck in front of the steersman to obstruct his view, and at the same time permits him to handle the boat and not be separated from the rest of his party.

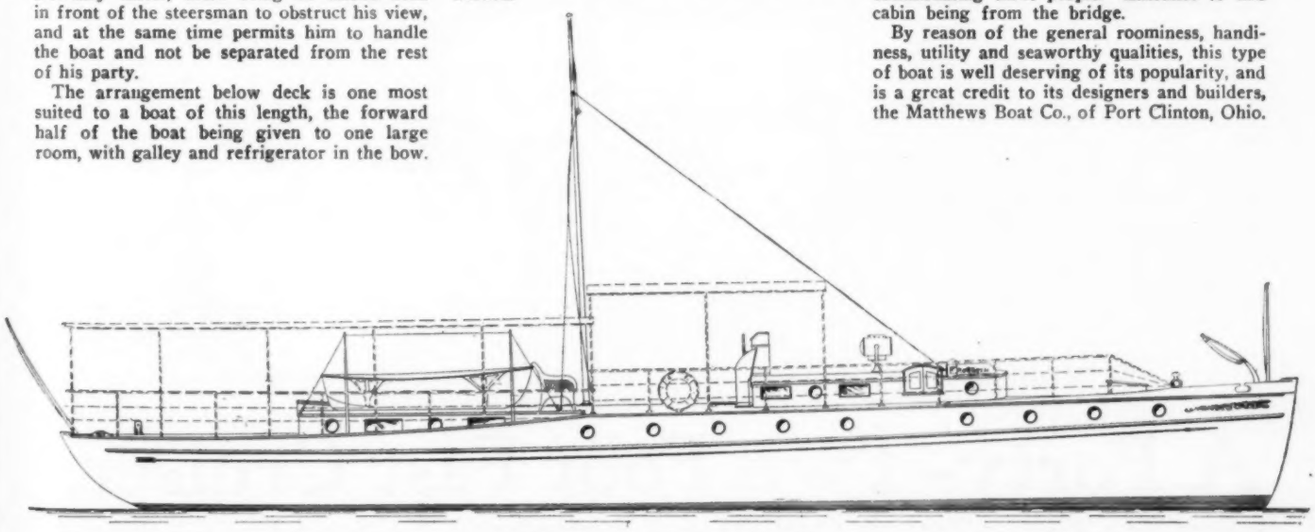
The arrangement below deck is one most suited to a boat of this length, the forward half of the boat being given to one large room, with galley and refrigerator in the bow. The transoms are of sufficient length, so that three people are readily accommodated here.

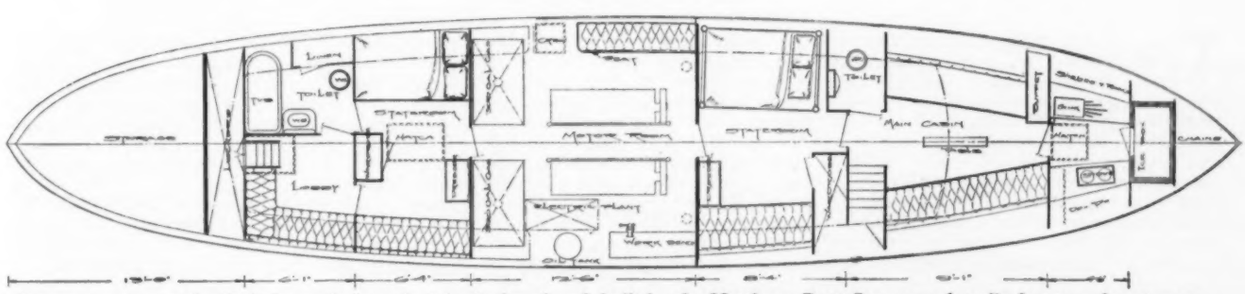
To do away with the low headroom over the motor, the raised deck is carried aft, so that good ventilation and full headroom are obtained in front of the fly-wheel where it is needed.

The gasoline and water tanks are installed at the sides of the boat, and these weights, together with the motor, being located amidships, will make an excellent sea boat.

The stateroom aft has full headroom, plenty of light and ventilation, and is capable of accommodating three people. Entrance to this cabin being from the bridge.

By reason of the general roominess, handiness, utility and seaworthy qualities, this type of boat is well deserving of its popularity, and is a great credit to its designers and builders, the Matthews Boat Co., of Port Clinton, Ohio.





A twin-screw motor yacht 68 ft. by 14 ft. by 4 ft. 6 in. designed and built by the Matthews Boat Company, described at top of next page.

A Twin Screw Motor Yacht.

Excellent Type of All Round Cruiser Easily Handled by One Man. Designed and Built by the Matthews Boat Company.

THE design shown at the bottom of the preceding page was prepared for a western yachtsman who spends his summer months in cruising, and was desirous of incorporating features in the design that would produce a boat that was fully able to go anywhere in any kind of weather. The beam and draft being made very liberal to give the necessary seaworthy qualities.

The boat is entirely operated from the bridge, and arranged for one-man control, one hand being all that is necessary.

The arrangement below deck provides for galley in bow of boat, with main cabin adjoining, the main cabin being used for a dining saloon. Contrary to usual practice, the owner's stateroom is located forward of the motor room, and is fitted with a standard size brass bed.

Two heavy-duty 4-cylinder motors furnish the power, the electric lights and search-light being taken care of by means of an independent plant in conjunction with storage batteries.

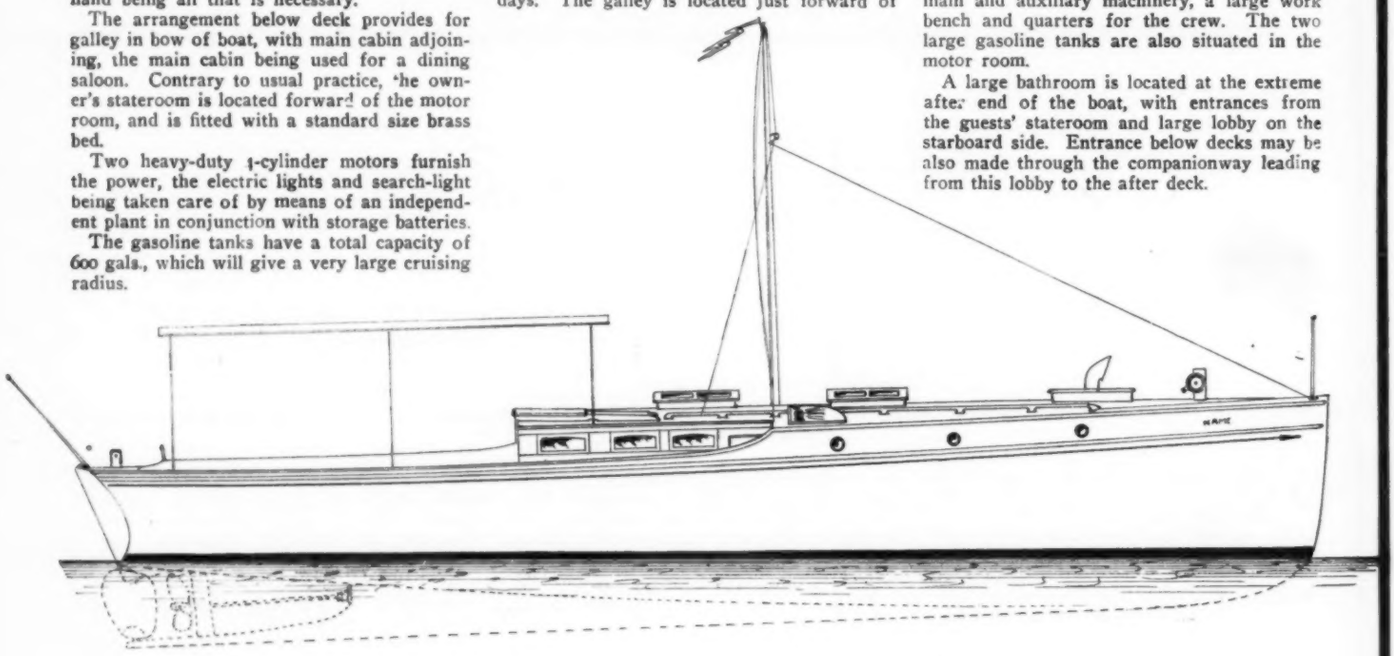
The gasoline tanks have a total capacity of 600 gals., which will give a very large cruising radius.

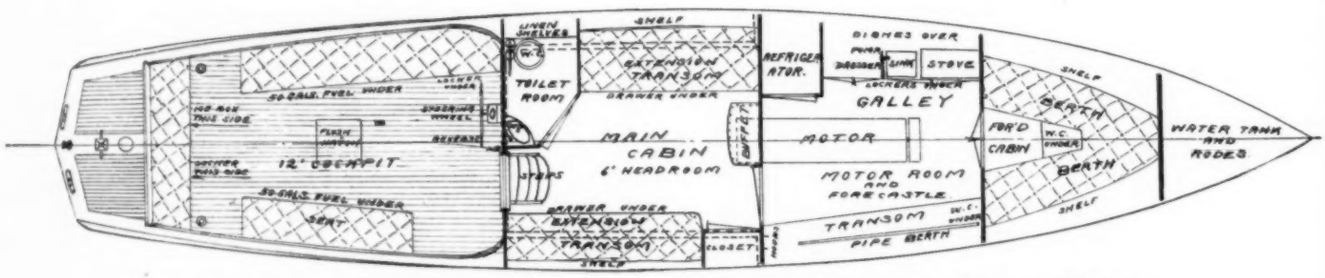
The aft part of the vessel is devoted to state rooms and bathrooms for the accommodation of guests.

One feature that is very convenient in a boat of this size is the continuous passage throughout the length of the boat, making it unnecessary for anyone going above to enter the forward or after staterooms.

At the extreme bow a large chain locker is located, immediately aft of which is the icebox, of such a capacity to last for many days. The galley is located just forward of the main cabin and well equipped with the usual fittings. The main cabin and owner's stateroom occupy the entire remainder of the boat forward of the motor room and have sleeping accommodations for five or six people. A large amount of locker and storage space is provided in these cabins. Entrance from on deck is by means of the companionway located on the starboard side, the toilet room being immediately opposite, on the port side. The motor room contains, besides the main and auxiliary machinery, a large work bench and quarters for the crew. The two large gasoline tanks are also situated in the motor room.

A large bathroom is located at the extreme after end of the boat, with entrances from the guests' stateroom and large lobby on the starboard side. Entrance below decks may be also made through the companionway leading from this lobby to the after deck.





Mr. Deed's designs for a 14 mile cruiser 42 ft. overall by 8 ft. 9 in. beam by 3 ft. draft, described below.

A Forty-Two Foot Fast Cruiser.

Designs for a Real Cruiser with Comfortable Accommodations for Seven that will Actually Make 14 Miles an Hour.

THIS attractive design from the board of Wm. J. Deed, Jr., naval architect, of Boston, Mass., shows a 14-mile cruiser with full headroom, comfortable accommodations for 6 and a paid hand, and has a well-proportioned division of cabin and deck room. The cockpit is 12' long and is well arranged for any sized party, while the cabin is entered from the cockpit without passing the motor or going through the galley. This main cabin is 8' 6" long, and has two extension transoms, buffet, closet, and opening from it a 2' 6" toilet room. It is a light, roomy, pleasant compartment.

Opening from the main cabin is the motor room and galley, where is found a 6-cylinder 60-h.p. motor. The crew's berth is found on the starboard, while galley is on port. In the forward cabin are two high berths with stowage beneath, while a toilet under the seat between the berths makes it possible to have a stateroom here for the men, while the ladies occupy the main cabin.

Two 50-gallon gasoline tanks under the seats provide the fuel, while there is an icebox under the after seat to allow a larger ice supply than can be gotten into the regular refrigerator. The fuel supply can be increased to very much greater capacity, but in this particular boat a small amount was all that was needed as she will never be far from port.

The profile shows a rakish model, with straight lines predominating. This type of hull is very popular and the designer has made all that was possible of the proposition.

A Raised Deck Seventy-Footer.

A Design by Morris M. Whitaker for a New York Yachtsman in which Special Below Deck Accommodations have been Worked Out.

IN getting out this design the owner's special requirements were kept in view. He desired a boat with accommodations in one stateroom for himself and wife and another stateroom for his son and any guest whom his son might have with him, and further accommodations in the dining saloon for two other guests, should he desire to take them along.

The general idea of design is for a heavy, deep-sea cruiser capable of going anywhere up and down our coast at most any time. For this reason the boat will be built extra heavy.

She has a large gasoline capacity, sufficient for a run from New York to the coast of Maine or from New York to Boston and back. The owner's own quarters are located under the after deckhouse, and consist of two double-width staterooms with toilet and bath between, entered through the companionway on the starboard side. The bridge deck extending over the engine room and galley gives large seating capacity. The galley is located just aft the main cabin, which has a room approximately 14 feet long by 8 feet wide. It is fitted with Pullman berths on either side, which fold up out of sight in the day time, dining table, buffets and small toilet off from it.

The crew's quarters are forward and entered direct from the deck. The boat will have four water-tight bulkheads and be fitted with hot water heat and electric light outfits. The motor will probably be 100-h.p. Craig.

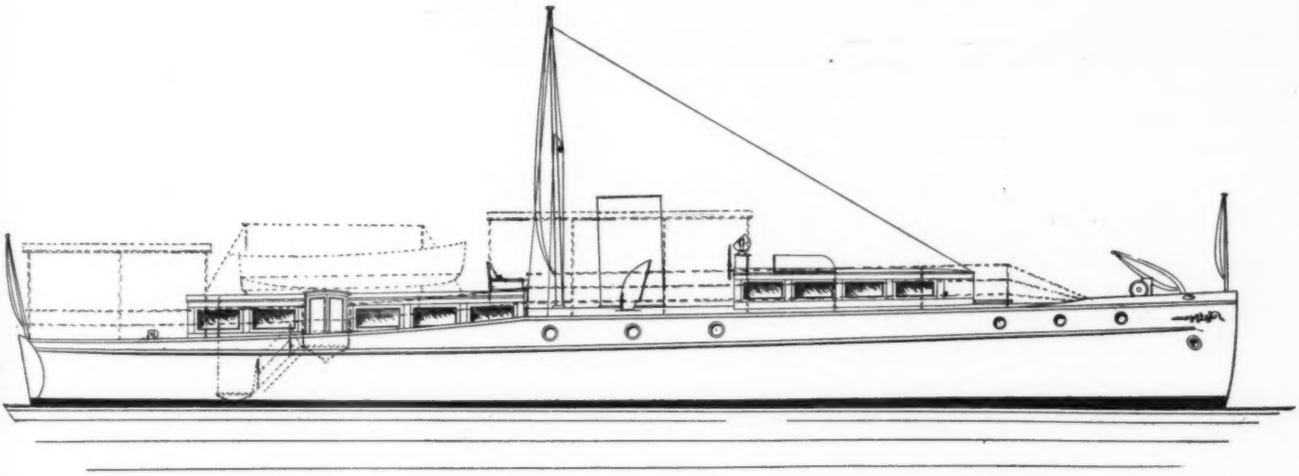
The main water supply is carried in large, cylindrical tanks under the main cabin and pumped from this to a gravity tank under the after end of the forward house, from which it is distributed to all the different fixtures. The gasoline tanks in the lazarette are intended as a reserve and only to be used in emergency.

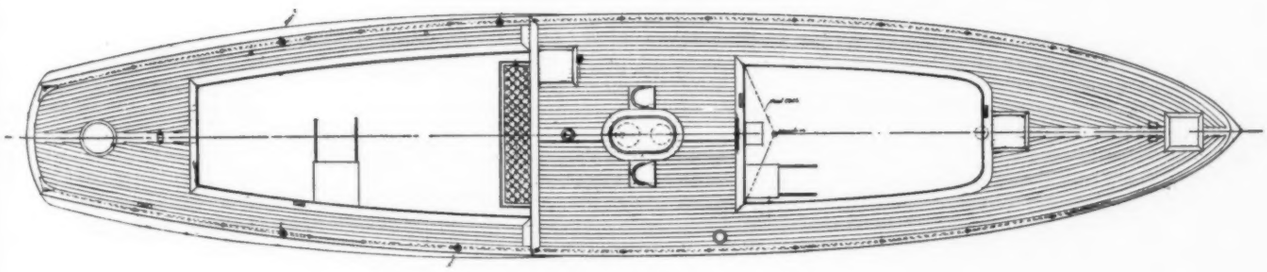
With power intended, the speed should be around thirteen miles per hour. The crew will consist of four men.

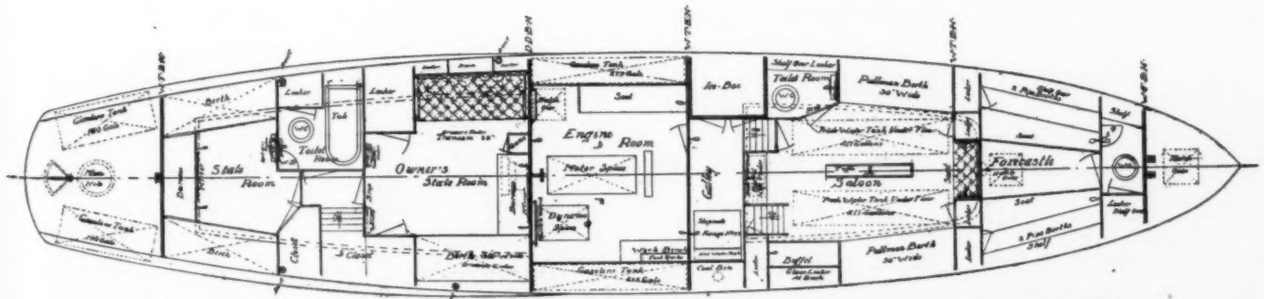
The finish of the owner's quarters aft will be mahogany and white enamel, and of the main saloon, mahogany throughout. Wood decks will be laid, only the cabin house top being canvas covered.

The outfit will be very complete and the boat strictly high class. She will carry two tenders, a 12-foot rowing boat and 14-foot motor tender. The draft will be 5 feet.

The owner's and guests' quarters occupy the entire section of the boat aft of the engine room, both staterooms being full width of the boat. All berths are of exceptional width and fitted with lockers underneath. Special attention has been paid to the provision of large clothes lockers and both staterooms have large sized ones. They are also fitted with large built-in bureaus and, taken all in all, no pains have been spared to provide the owner as much comfort afloat as he is accustomed to when ashore.







Mr. Whitaker's design shows two separate and distinct staterooms in addition to the regular arrangements.

A 35 Foot Cruiser-Runabout.

A Design by Stearns & McKay of Marblehead, Mass., for use along the Maine Coast. With a 30 H. P. Engine a Speed of 10 Miles Per Hour is Obtained.

THE plans of the 35-ft. motor boat shown below designed by Stearns & McKay Co. for Mr. Charles C. Goodrich, of Orange, New Jersey, for service at his summer place at York Harbor, Maine, is a fine example of the work done by this firm, and is characterized by the absolute simplicity of arrangement together with exceptional beauty of design and appearance. She is planked and finished throughout with the finest grade of mahogany. Strength, safety and seaworthy qualities were the qualities particularly sought for.

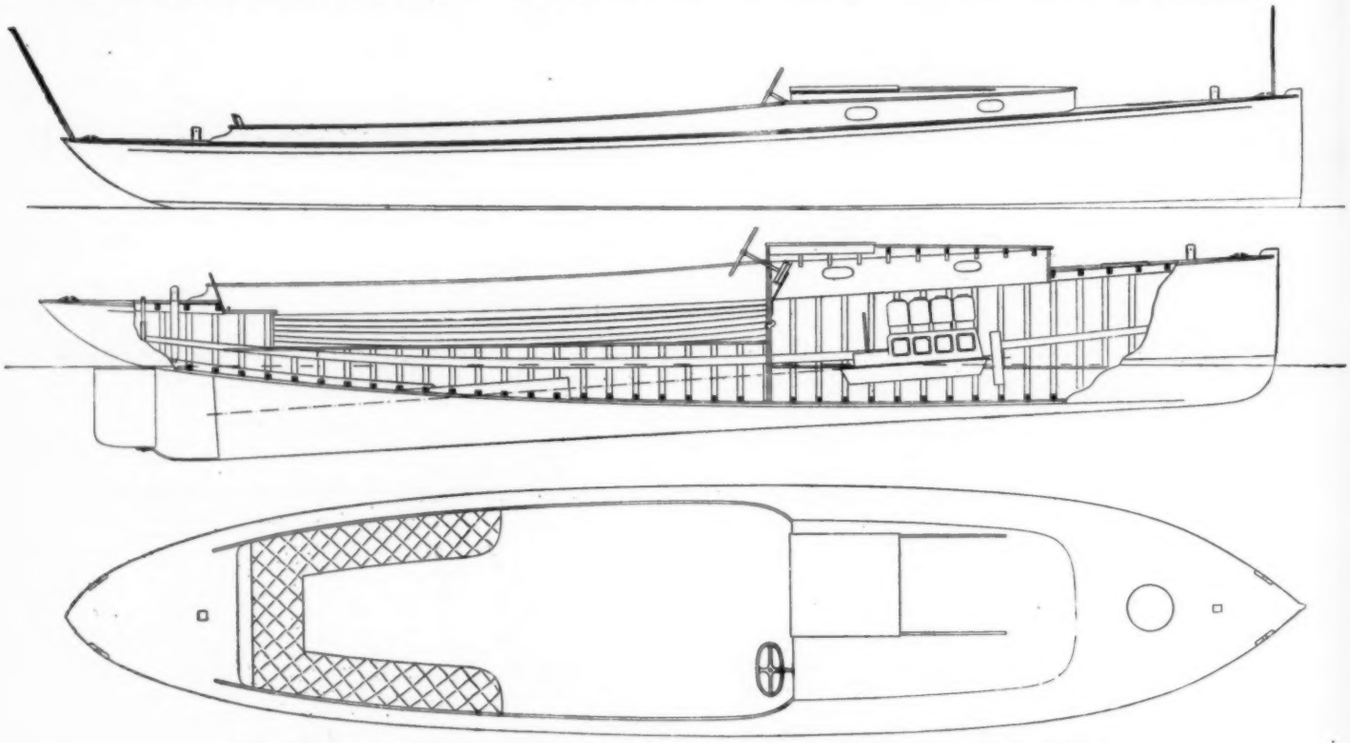
The engine house forward with its wide sliding hatch is of ample size to give free access to the machinery. The motive power is a 4-cylinder, 30-h.p., 4-cycle Jager engine with self-starting air-pressure equipment, as well as the regular starting lever. The large cockpit is provided with chairs for guests as well as the cushion seats aft. The speed, which was a secondary consideration, is ten miles per hour.

The boat has an over-all beam slightly over 7 ft., with a waterline beam of 6 ft. 6 in. Her lines show a clean-cut underbody which should drive through the water at a reasonable speed with a minimum amount of power. The engine being self-starting, makes the power plant chosen of exceptional value for short trips among the islands off the Maine coast, for which service the boat was designed.

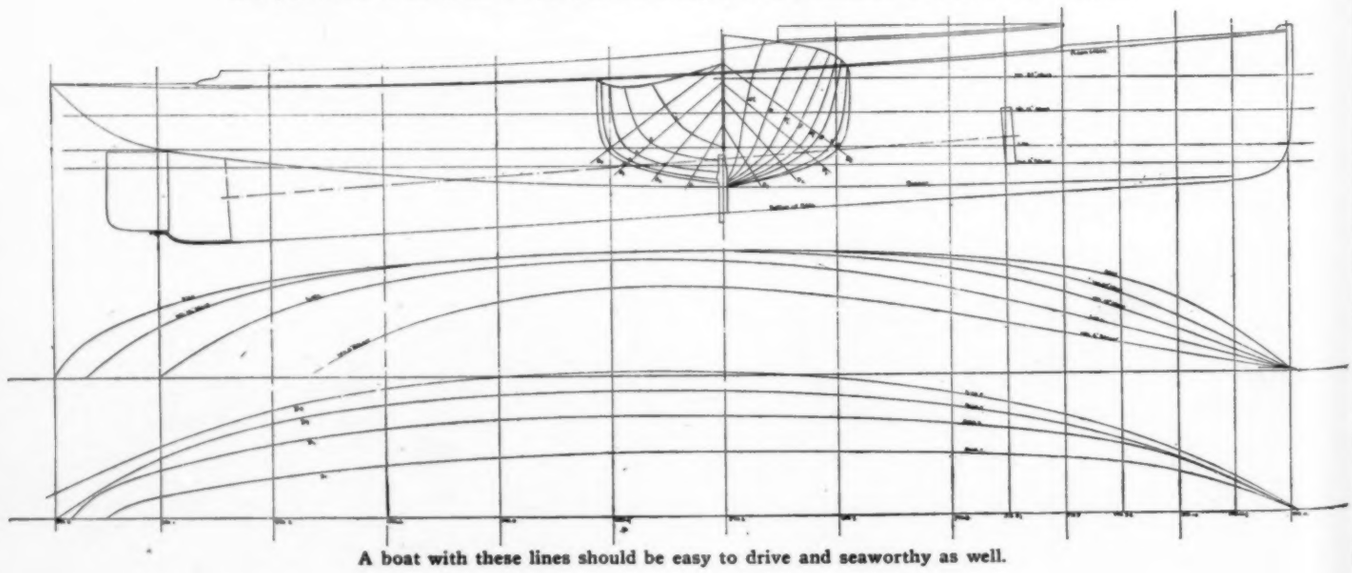
The construction of the hull is very strong yet light, the frames being spaced 9 inches from center to center throughout the length of the boat.

The plumb bow and compromise stern give the boat a good appearance, in addition to making her an excellent sea boat. The lines at the stern are full enough, however, to prevent the tendency to squat, which generally occurs when this type of stern is driven through the water at a speed which this boat is intended to be driven at.

An auto steering wheel is used, located on the after side of the shelter cabin house at the starboard side of the cockpit. Large towing posts are provided both on the forward and after decks, doing away with the all too impracticable small cleats with which many boats are equipped. Both decks are of ample size to prevent any solid water from coming aboard, and a narrow deck extending along the sides of the cockpit offers further protection in addition to the high side coaming.



The plans show a well-protected yet get-at-able engine with a maximum amount of cockpit room.



A boat with these lines should be easy to drive and seaworthy as well.

A Twin Screw Day Cruiser.

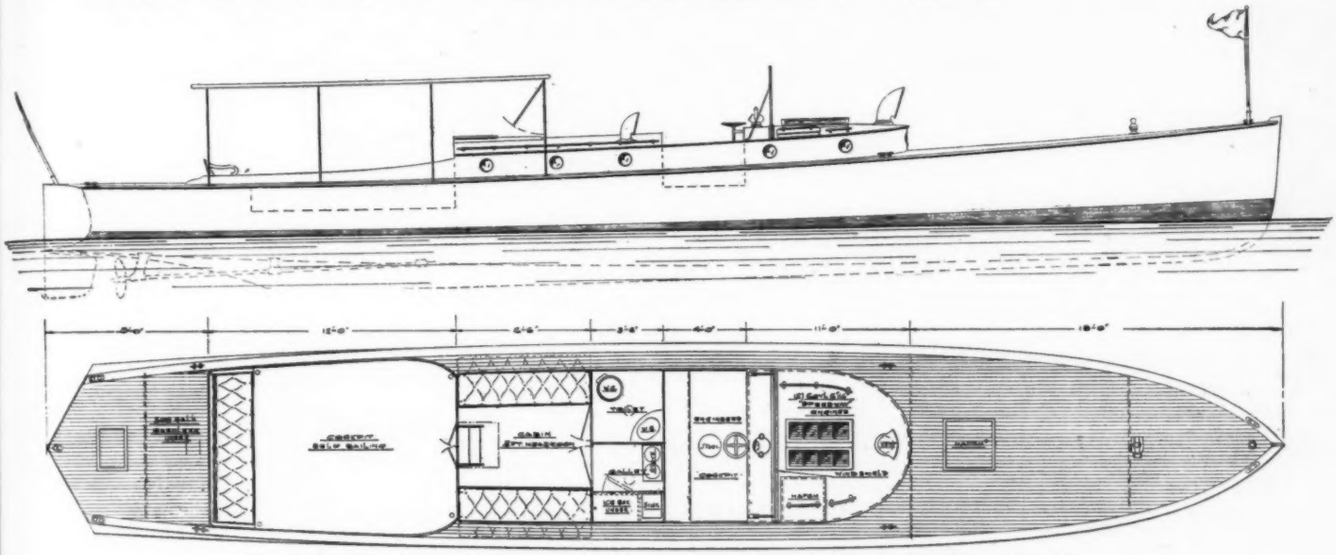
The Design for a 60-Footer Built by the Gas Engine & Power Company & Chas. L. Seabury & Company With a Guaranteed Speed of 21 Miles per Hour.

THE design below is of a new 60-ft. motor yacht, twin screw, that The Gas Engine & Power Co. and Chas. L. Seabury & Co. are to build for Mr. George H. Walker, of St. Louis, Mo., for service at Kennebunkport, Me.

It is a day cruiser, 60 ft. over all, 10 ft. beam, 3 ft. draft, and the speed guaranteed is 21 miles per hour. Although the boat is designed for day service, it has accommodations for several people to sleep aboard at night, also toilet and galley accommodations. The hull will be planked and finished throughout in mahogany. There will be a self-bailing cockpit, 12 ft. long, at the after end, and chairs will be used in this compartment. The operator's cockpit is located forward, giving control to the two six-cylinder, 6x6-in. "Speedway" motors from the steering wheel. Glass windshield arranged forward of the steering wheel. There will also be a hinged windshield at the forward end of the awning aft. The side curtains will be arranged to raise from the plank shear, instead of the regulation drop curtains from the awning down. A 300-gallon fuel tank will be arranged under the afterdeck, this to be constructed of copper, in accordance with regulation "Speedway" practice. A guaranteed speed of 21 miles per hour is contracted for. Considering the length of the boat, 21 miles per hour is exceptionally fast going.

The boat will be handsomely finished and furnished throughout, and will be lighted by electricity.

Mr. Walker has had a 45-ft. "Speedway" launch in service at Kennebunkport for the past three or four seasons, the 60-footer being a repeat order.



The design of a fast 60-ft. day cruiser with accommodations for living aboard on short trips.

A High Speed Cruiser.

Designed by Wm. Edgar John for Use on the Delaware River.

THE accompanying drawings are of a 45 ft. high speed cruiser designed by Wm. Edgar John, P. O. Station "C," Philadelphia, Pa., for a member of the Keystone Yacht Club, to be used on the Delaware River and Bay. In laying out this boat the problem was to have an attractive-looking outfit which could maintain a cruising speed of 20 miles per hour and have a boat that was substantially constructed.

The hull is rather heavily built for a high-speed boat, the frames being of oak, 1½x1⅞ in., planking 1⅛ in. white cedar. The keel is of white oak, sided 5 in. with a heavy keelson running the entire length of the boat and through fastened to floors fitted at top of frames.

In the forward peak of the boat is arranged a chain locker and fresh water tank. There is a door in the lower half of the forward bulkhead, so it is possible to get into the chain locker. The engine room is located forward. a work bench fitted with a vise and tool locker is arranged forward; on each side of the boat are fitted pipe berths for the crew.

The power plant consists of two six-cylinder, 6 in. bore and 6 in. stroke motors built by the Frisbie Motor Co., Middletown, Conn. Each engine develops 80 h.p. at 850 r.p.m. A dynamo is belted to the starboard engine, which is used to charge the storage batteries that are located under the after cockpit floor. A switchboard is arranged on the forward bulkhead. There are fifteen 16 c.p. lights arranged below and there are the side, stern and bow lights on deck. A 7 in. lens arc searchlight is located on the starboard side. There are electric fans and an electric heater arranged in the saloon.

Aft of the engine room comes a very large galley. A large ice box is arranged on the port side and a two-burner stove on the starboard side; a sink and large locker are located forward. Dish racks are fitted over the sink. There is a drinking water tank located in the stack, which is connected to a lead pipe that is run down into the ice box and arranged in a coil under the ice and fitted with a spigot, as shown.

Aft of the galley comes a saloon. On the forward starboard side is located a large, full-height wardrobe, fitted with hooks and shelves. On the forward port side is a buffet fitted with a wine locker, serving board and drawers. On each side are arranged an extension transom with drawers under. On the aft starboard side is an oilskin and gun locker. Over the transom seats are arranged small lockers fitted with leaded glass doors, and an alcove with a mirror fitted in back of it. There are double doors between the galley and saloon, each fitted with a full-length mirror. At the after starboard side is arranged a companionway.

At the after port side is a large toilet fitted with wash basin and water closet. The toilet is tiled and finished in white with mahogany trimming. The saloon is finished in panelled and carved mahogany. Curtains, carpet and cushions are of royal blue. Galley is finished white, and engine room in brown.

A very large, water-tight, self-bailing cockpit is located aft, fitted with a comfortable transom seat. Under the cockpit floor are arranged two 100-gallon cylindrical gasoline tanks, between which is a large storage space.

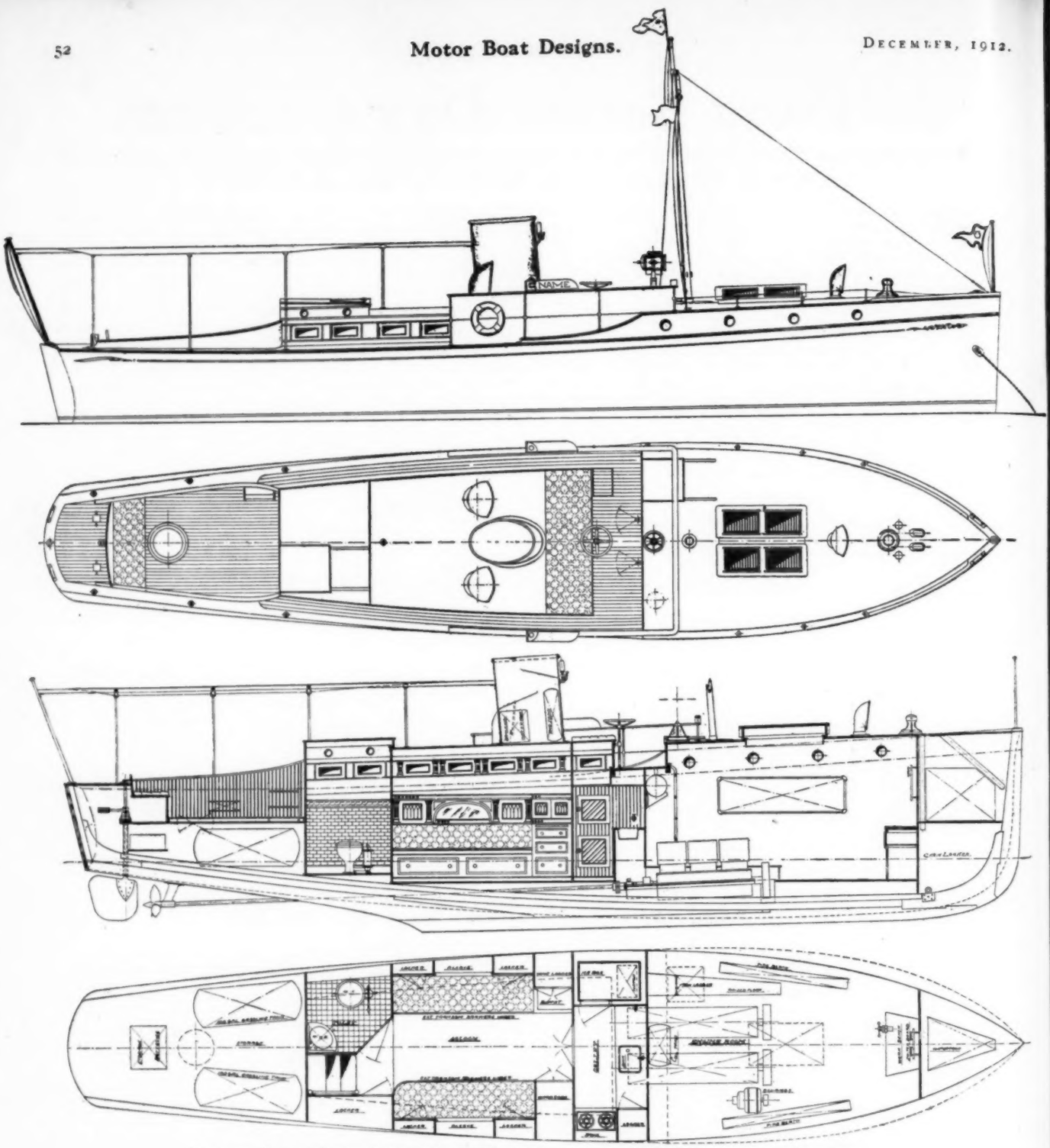
A very comfortable bridge deck is arranged forward, to which all engine controls are led, making the boat very easy to handle. There is a vertical steering wheel located in the center with a large compass directly forward. There is a rail around the bridge fitted with a weather cloth. On the port side is located a hatch that leads down into the engine room. A large skylight is fitted over the engine room.

In the engine room the ports are arranged to swing, and with the skylight and cowl ventilator makes the space well ventilated. The windows in the after house are arranged to open. Two large cowl ventilators are fitted to the deck and arranged to be closed from the inside. All windows, ports and companionways are fitted with screens.

Although not shown on the plans, there has been an arrangement made to carry a lightly built 8-foot dinghy on the starboard side.

All the houses and outside trimmings are to be of mahogany, finished bright. The cockpit floor, side decks and bridge deck are of white pine, finished bright. The hull is painted black above the water-line and bright green below, with a white boot top between. The cabin top, forward deck ventilators and stack are finished in navy buff.

This makes a very desirable boat for ferry service, although she has every comfort found on cruisers. The dimensions are: Length, 45 ft.; beam, 9 ft.; draft, 3 ft. 3 in.



A commodious 45-footer designed by William Edgar John and described on the preceding page.

A 10½ Mile Thirty-Nine Footer.

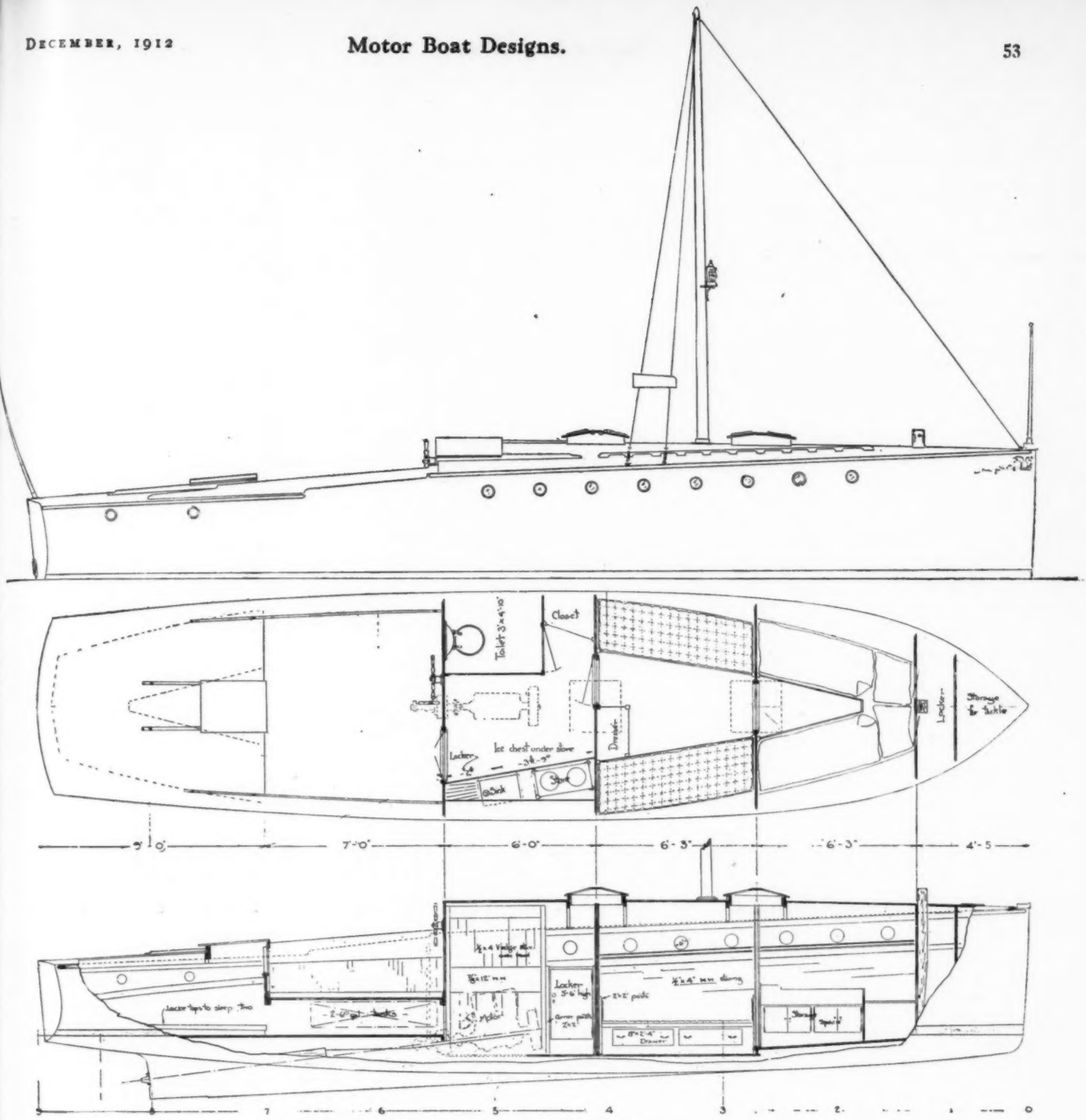
A Design by Atkin-Wheeler Company That Requires Only 24 H. P. to Make This Exceptional Speed.

THE accompanying plans are of a 39 ft. cruising launch designed by the Atkin-Wheeler Company for a Southern yachtsman. The rating under the American Power Boat Association is 39.75, and the speed with a 24 h.p. double cylinder Gray motor, 10½ miles an hour. The over-all length is 39 ft., water line length 38 ft. 3 in., width on deck 9 ft., the width on water-line 9 ft., and draft 3 ft.

The cockpit is 7 ft. long by about 8 ft. wide, and is self-draining. A companion slide on after deck gives access to the cuddy, in which are two berths, each 8 ft. long and of good width. Full control of the motor, clutch and reverse gear is at the wheel, located upon the port side of forward bulkhead. The cabin entrance is to the starboard and leads through motor room, one side of which is utilized as a galley with stove, ice chest, sink, dish lockers, etc. The toilet room is on port side, 3 ft. by 4 ft. 10 in. long, and is fitted with closet and folding lavatory and small locker. There is a tool locker forward of toilet room.

The main cabin is 6 ft. 3 in. long, full width of the boat and has 6 ft. of headroom. There are wide berths each side, 13 in. above the floor, with two drawers under each, also a dresser, 2 ft. 9 in. high, against after bulkhead. Forward cabin is 6 ft. 3 in. long, has 5 ft. 9 in. headroom and is fited with wide, comfortable berths 1 ft. 9 in. above the floor, giving large lockers beneath. Clothes locker is forward. Beside numerous port lights, additional ventilation is obtained through two skylights, one over the motor room, main cabin partition and main forward cabin partition.

Outwardly the craft shows a plumb bow, a straight practically continuous sheer.



Atkin-Wheeler's 39-foot speed cruiser that rates only 39.75 under the rules.

An 85-Foot Motor Cruiser.

A Design by the Pickering Company for Alaska Service. Speed 15 Miles With 150 H. P.

THIS cruiser was designed for use on the Pacific coast and the inland route to Alaska. The design is of the modified steamer type, seaworthy, yet capable of 15 miles an hour with the two 75 h.p. engines installed.

The dining saloon is located forward in the deck house, and is finished in solid mahogany. The galley and pantry are in the after part of the deck house, and communicate by dumbwaiter to the crew's mess room and by swinging door to the dining saloon. The bridge deck, with ice box under, is used for fair-weather steering, while in the heavy weather so often encountered in the winter, the deck house controls will be used.

The after companionway enters into a passage off of which are the staterooms, bath and main cabin. The after stateroom or owner's room is finished in mahogany and gold, there being two berths with drawers under. All woodwork is plain and substantial.

The bathroom is finished in white enamel and tile. In appointment it compares with the finest found ashore. The linen clothes presses are found on the port side.

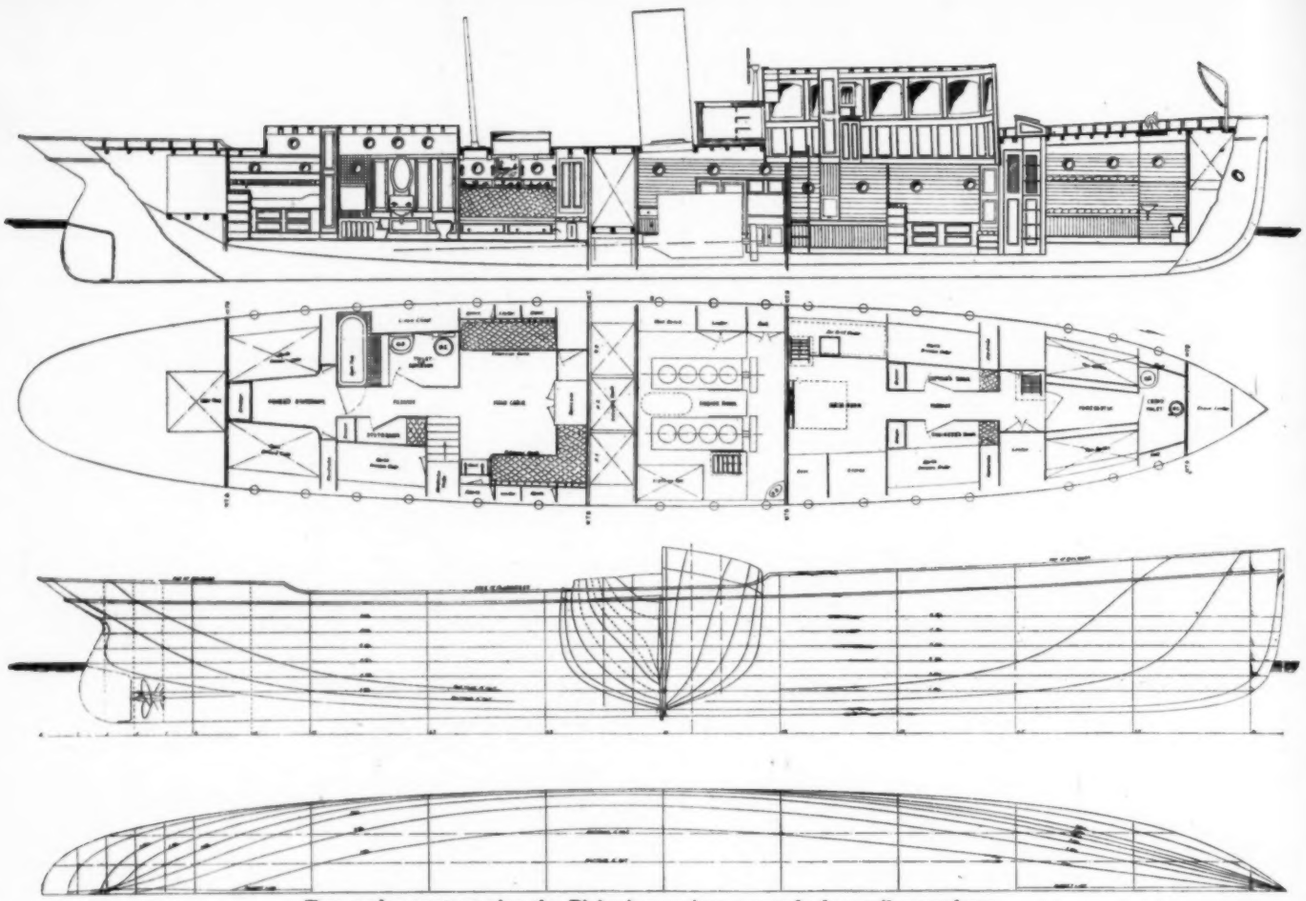
On the starboard side of the passage there is a single stateroom finished in mahogany and white enamel.

The main cabin has been treated like an arts and crafts study as far as the accommodations would permit. The woodwork is solid mahogany with dull finish. A complete woodland scene has been carried out by means of tooled leather panels and friezes. The coloring is rich reds and yellows, giving a striking effect against the somber and solid mahogany. The leather work was done by a well-known arts and crafts artist in conjunction with Mr. Pickering who designed the boat. The cabin as a whole is a distinct step forward in motor boat interiors. The lounging seats can be extended, giving sleeping accommodations for four people.

Forward of the main cabin are the fuel tanks, placed over the center of buoyancy and between two water- and gas-tight bulkheads. The engine room is well ventilated by a stack and down-draft cowls, and is supplied with best of up-to-date practice.

The crew's messroom is forward and separated from the engine room by a water-tight bulkhead.

From the passage which connects the messroom with the forecastle opens the captain's and engineer's rooms. At the forward end of the passage are the oilskin and crew's lockers.



Two 75-h.p motors give the Pickering cruiser a speed of 15 miles per hour.

An 86 Footer for the Sound.

Excellent Design by the Luders Marine Construction Company to Replace a 60 Footer Designed and Built by the Same Company.

THE above plans have been drawn up for a tentative 86 ft. cruiser to replace a 60-footer designed and built by the Luders Marine Construction Company, of Stamford, Conn., for a prominent member of the New Rochelle Yacht Club. The idea of the design was to provide accommodations for a party of seven with practical privacy for all.

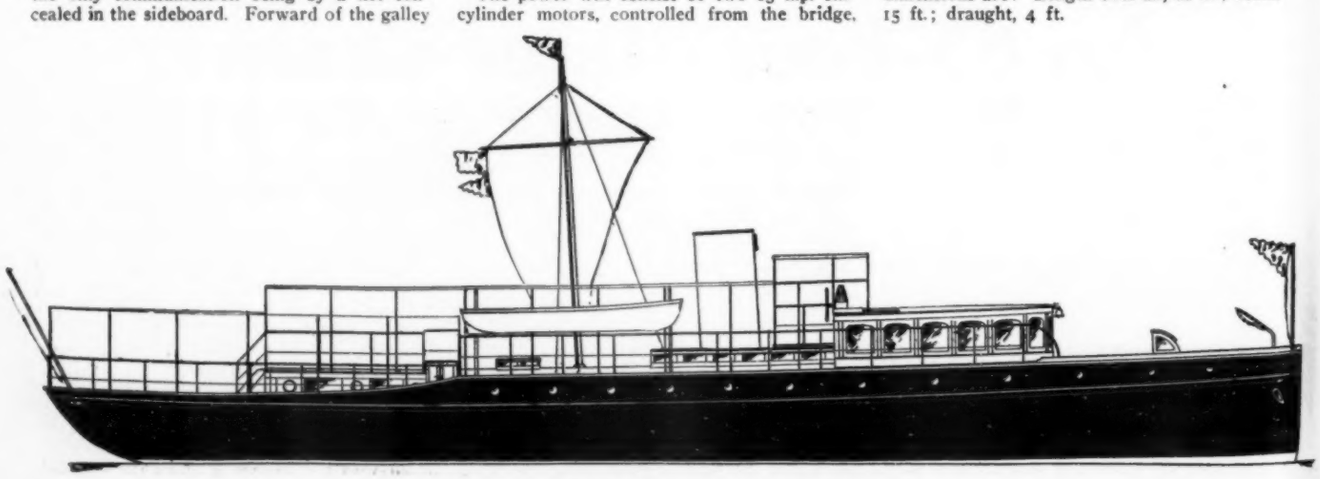
A deck dining saloon remote from the owner's quarters and of unusual size has been included. The galley is beneath the deckhouse, the only communication being by a lift concealed in the sideboard. Forward of the galley are quarters of unusual airiness for the crew.

The quarters aft are entered from a side companionway entering direct into the library. Around this point the various staterooms are nearly symmetrically arranged. Mahogany and white enamel, of a matte finish, will be the scheme of decoration in these rooms. Ample ventilation through ports and skylights assured.

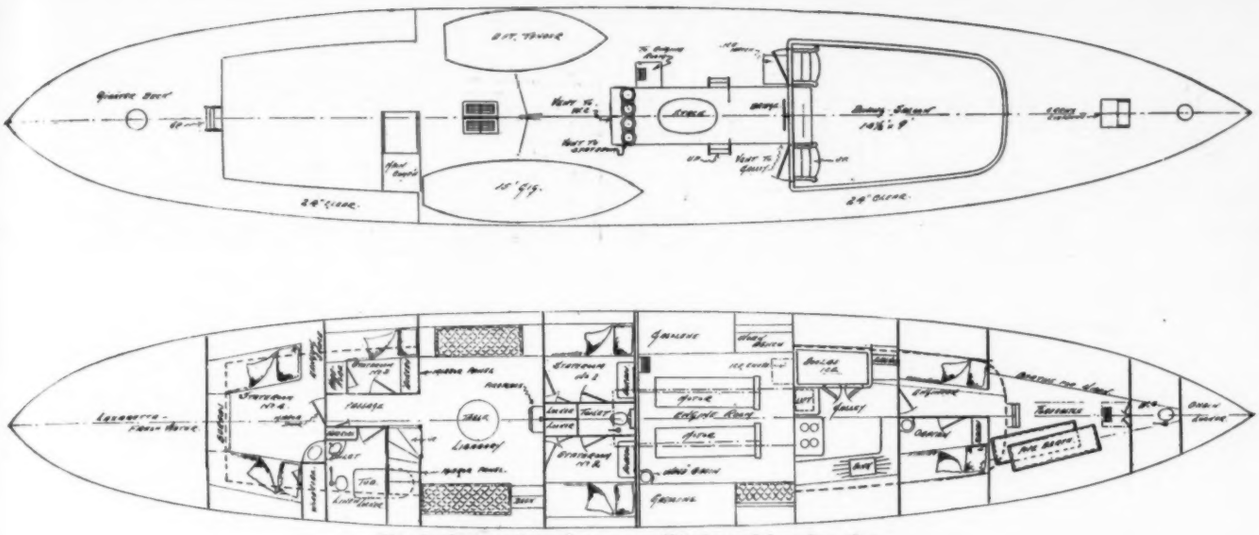
The deck space is extremely ample, both on the raised and main decks, and a small navigating bridge insures no undue crowding or interference with the helmsman.

The power will consist of two 65 h.p. six-cylinder motors, controlled from the bridge, and located between steel bulkheads. The gasoline and fresh water service are of a capacity to anticipate possible Southern cruising.

In general appearance this boat will closely resemble on a large scale the recent production of this firm, Granada II, shown elsewhere in this issue, and should have, if anything, a little more speed than that vessel. This general type of boat has proven very seaworthy and comfortable, and there has been arranged more accommodation, without crowding, than in probably any other 86-footer. The general dimensions are: Length over all, 86 ft.; beam, 15 ft.; draught, 4 ft.



The handsome Luders 86-foot cruiser.



The Luders cruiser shows a well-balanced interior plan.

An Able Forty-Three Footer.

A Design by W. E. Anderson for Use on the Great Lakes.

THE accompanying drawings of the 43-foot cruiser shown are from the boards of W. E. Anderson, Albuquerque, N. M., for a Michigan yachtsman for use on the Great Lakes.

Her lines are designed for seaworthiness and comfort. The freeboard is ample with good draft, as she will not be used in shallow water.

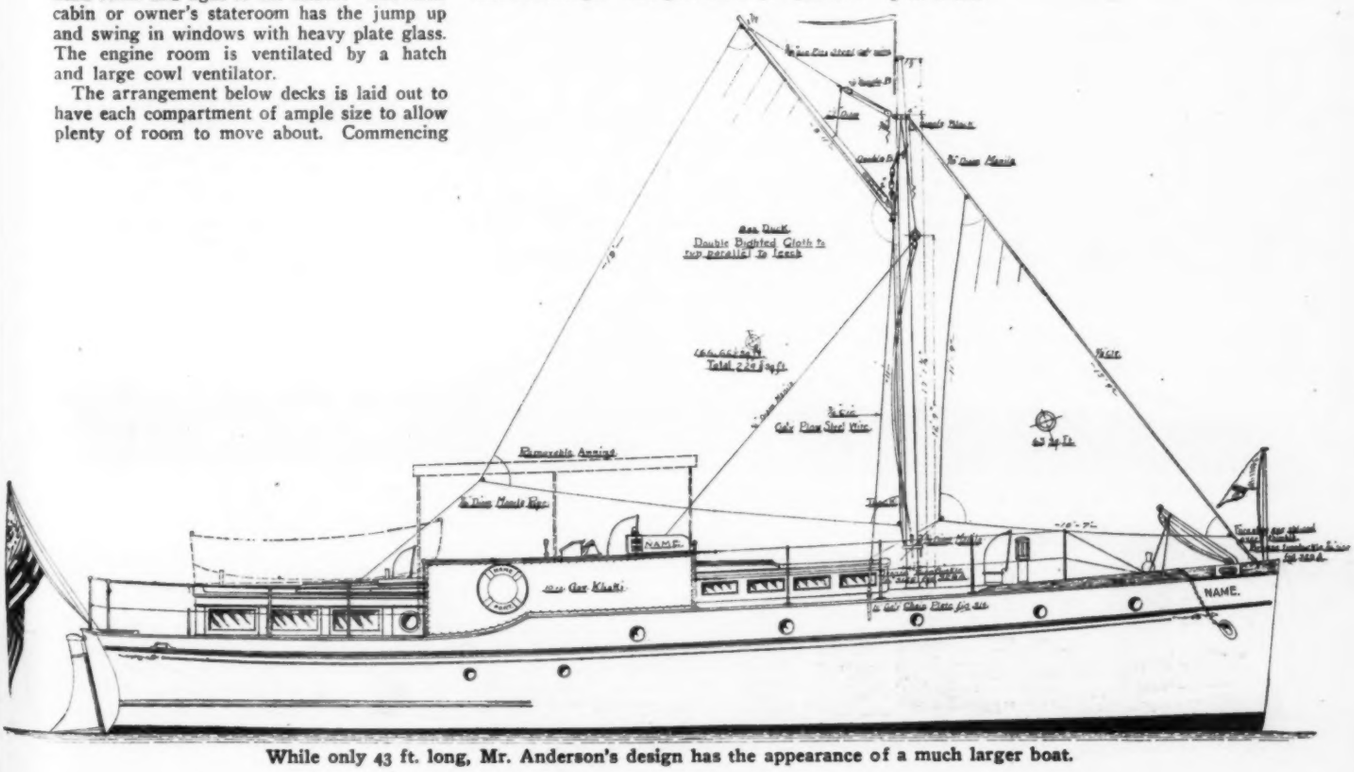
The construction is heavy throughout. The keel is of white oak 5 inches thick, planking being 1½ inches long leaf yellow pine, the frames white oak 1¾ inches by 2 inches spaced 12-inch centers and 6 inches in way of the engine. Stringers of yellow pine, pine decks, oak deck beams and exterior finishing is of white oak. Above the raised deck portion of the boat is a small trunk which adds extra head room and light to the saloon. The after cabin or owner's stateroom has the jump up and swing in windows with heavy plate glass. The engine room is ventilated by a hatch and large cowl ventilator.

The arrangement below decks is laid out to have each compartment of ample size to allow plenty of room to move about. Commencing forward is a small toilet separated from the galley by a curtain. Next aft is the galley containing a No. 2 Shipmate coal range, sink, refrigerator, and closet for dishes. Next comes the saloon with two wide transoms with extensions and drawers under them. On the port side is a buffet and across from this is a good sized wardrobe; in the forward end of the saloon are two clothes closets. Next aft is the engine room, which is partly under the bridge deck, from where the boat will be entirely controlled. On the port side of the engine room is a work bench and a 100 gallon gasoline tank, which can be readily removed in case of leakage; on the starboard side is a 30 gallon fresh water tank used mostly for drinking purposes; also another 100 gallon gasoline tank, which may be removed easily in case of leakage. The gasoline is pumped to a small service tank from where the gasoline is fed to the motor by gravity. The engine is a 25 h.p. Standard, giving the boat a speed of 11 miles per hour. The boat will be lighted by electricity.

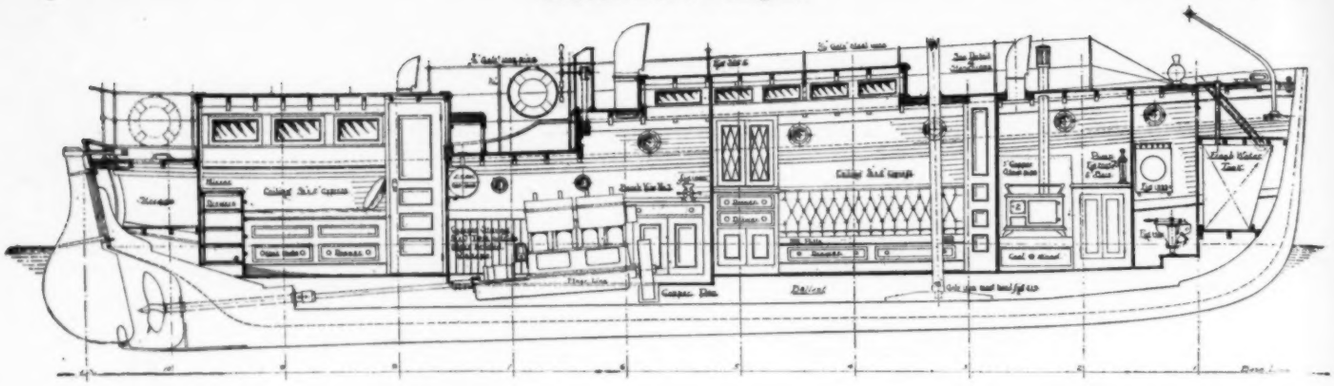
The owner's stateroom is separate from the rest of the boat, and contains two stationary berths. In the forward end on the port side is a toilet and across from this is a stairway leading up to the bridge deck.

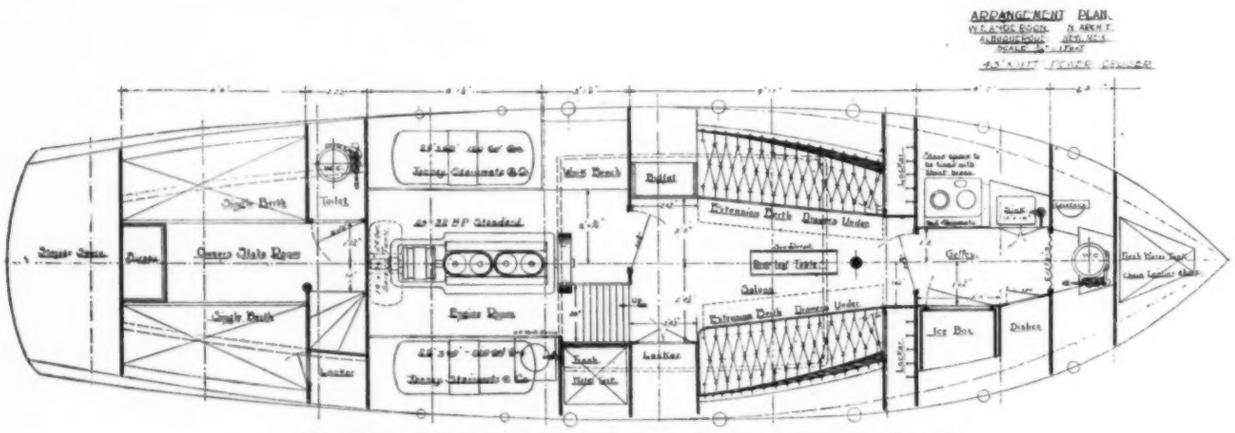
The boat carries an auxiliary rig, consisting of jib and mainsail for use in fair winds or emergency. On deck she will be fully equipped with anchors, chains, lights, dinghy, etc. The bridge deck is to be well protected by a high railing covered with spray cloths.

The general dimensions are: Length overall, 43 ft.; beam extreme, 11 ft.; draft extreme, 3 ft. 8 ins.



While only 43 ft. long, Mr. Anderson's design has the appearance of a much larger boat.





Mr. Anderson has worked out his arrangement plans to good advantage.

A Canadian Runabout.

A Fast but Strong Craft Powered with a 40 H. P. Buffalo Motor.

THE plans below show a design by Mr. E. Drolet, of Park Laval, Quebec, now building for Mr. L. Prince, of Montreal, editor of "La Presse."

There is nothing very startling or very new about the boat. The specifications call for the very best construction and materials throughout: Oak frame, B. C. cedar planking, canvas decks, filled and polished with mahogany trimmings, these to include transom, covering boards, coamings, seats, back rests, beadings and ceilings.

The gasoline tank will be located between the backrests of the two center seats and will feed by gravity. Oil is to be carried in a special tank slung from the center deck and filled from above. The control bulkhead will be paneled in mahogany and on this will be mounted the various controls, auto-steering wheel, gasoline and oil gauges, oil pump, tachometer, clock, rear starter, coil and switch.

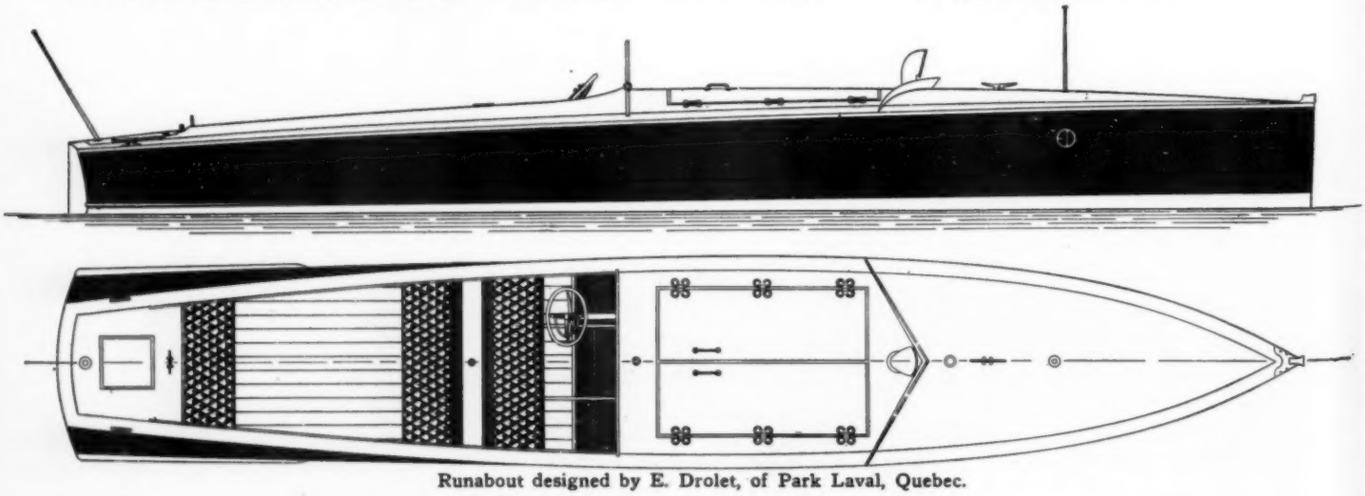
There will be a tool and battery locker provided under the driver's seat. The flooring in front of this seat will slant up, automobile fashion, affording a good foot rest and will be covered with pyramid aluminum matting. The space under the two other seats will be used as lockers for the various odds and ends necessary aboard a boat of this type—lamps, lines, anchor, belts and oil skins.

Two watertight compartments are provided, one forward and another aft. These affording additional storage spaces accessible through watertight gasketed hatches.

The boat fittings are to be bronze and of special design. A folding automobile windshield will keep the spray away from the driver and also the wind on a cold day.

The motor, a 40 h.p. Automarine Buffalo engine, is forward under hatches of sufficient dimensions to allow lots of elbow room when they are opened up to get at the motor. The flooring about the motor is also to be covered with aluminum mattings; there will be special can and waste racks and boxes; also clips to hold the tools which are necessary near the machine. The hatches will have rubber gaskets at their edges and will, in addition to this, have drip troughs piped overboard. The exhaust line will be copper tubing and the water piping brass.

The shaft hanger will be a Columbian self-aligning strut with a rudder of the same make to match. The propeller used will also be a Columbian. Two long and wide oak fenders capped with half-round bronze will afford good protection to the sides.

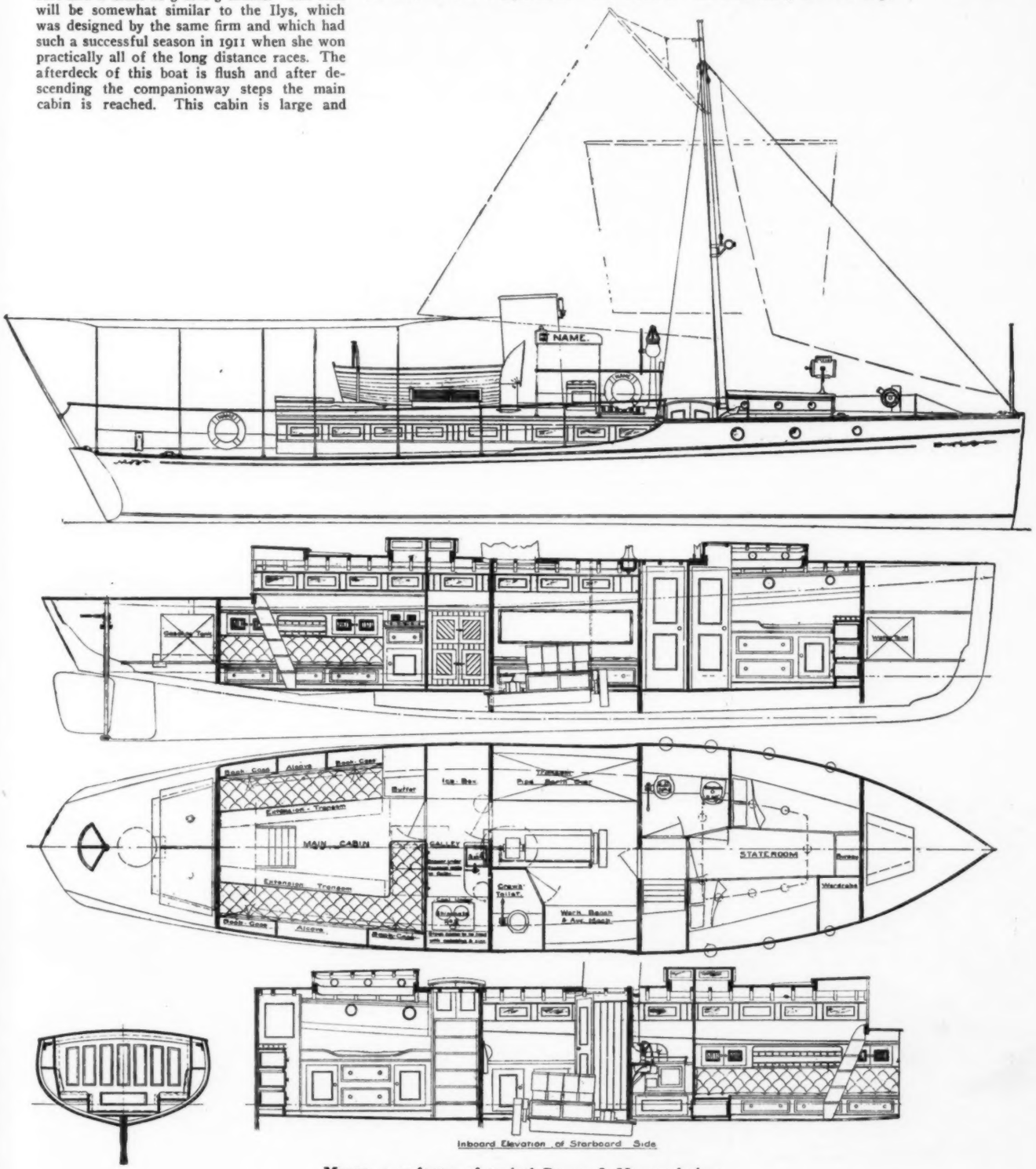


Runabout designed by E. Drolet, of Park Laval, Quebec.

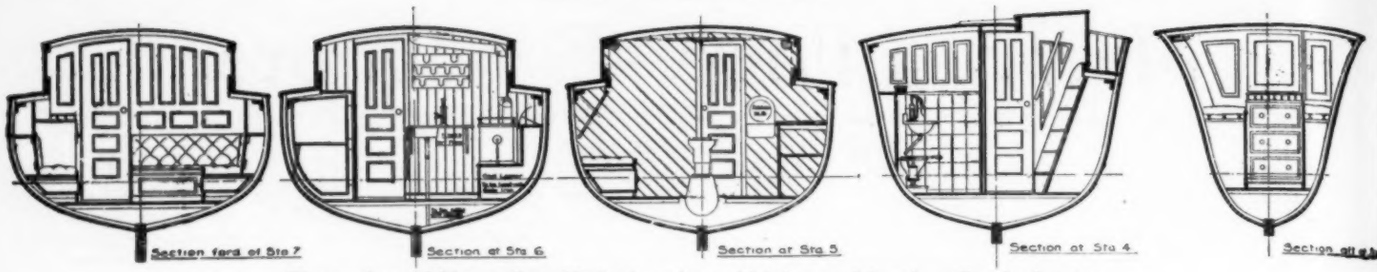
Margo, a Forty-Five Footer.

A Cruiser Designed by Bowes & Mower of Philadelphia and Owned by Frederic D. Nathans of Island Heights, N. J.,

A FORTY-THREE-foot six-inch water-line combination raised deck and trunk cabin cruiser from the boards of Bowes & Mower, of Philadelphia, for Mr. Frederick D. Nathans, of Island Heights, N. J., is shown below. The boat will be powered with a Standard motor and will have a beam of 10 feet and a draft of 3 feet 3 inches. The boat will be somewhat similar to the Ilys, which was designed by the same firm and which had such a successful season in 1911 when she won practically all of the long distance races. The afterdeck of this boat is flush and after descending the companionway steps the main cabin is reached. This cabin is large and roomy, with two extension transoms and a buffet. Forward of the main cabin there is the galley equipped with a large ice box and ship mate range, also a sink. Forward of the galley is the engine room containing the Standard motor and a berth for the engineer. There is also a work bench and a toilet for the use of the crew in this compartment. The owner's stateroom is forward under a small trunk and contains two berths, a wardrobe and a complete toilet room. The navigating bridge is directly over the engine room and the dummy stack provides ample ventilation to the engine room. There is a mast stepped forward upon which some small sails can be fitted to hold the boat steady in a sea way.



Margo, a 45-footer of typical Bowes & Mower design.



The sections of Margo, Capt. Nathan's cruiser, which is now driven by a Standard motor.

A Shoal Draft Cruiser.

A Boat with a Beam of 15 ft. Which Provides Exceptional Accommodations.

THE cruiser shown in the designs below was designed by Ralph E. Winslow, of Quincy, Mass., for use in Florida and other shoal waters. She is a combination cruiser and houseboat with the good appearance of the former and the room of the latter. She is 62 ft. overall, 15 ft. beam and 2 ft. 10 ins. draft.

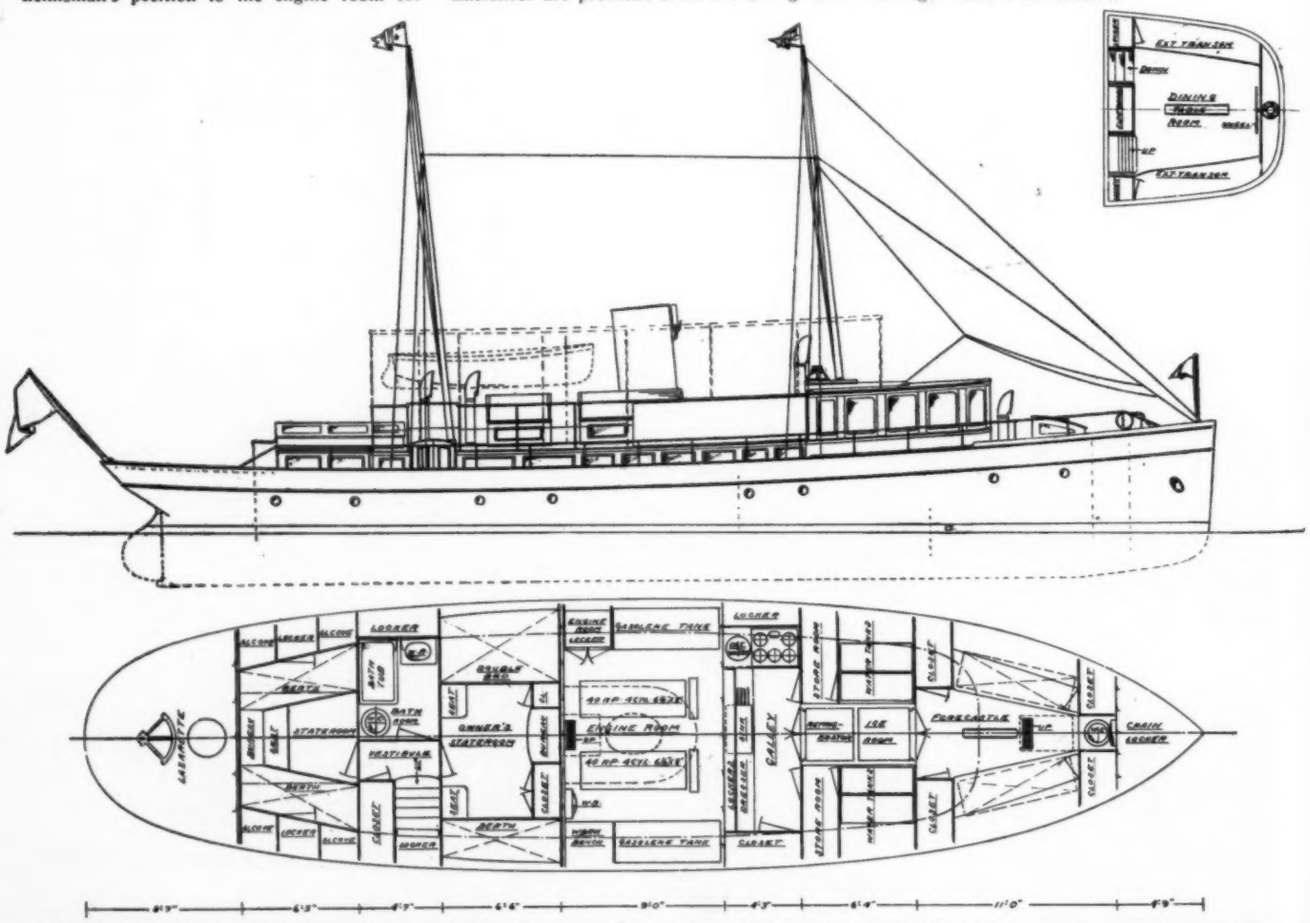
Particular attention has been given in this boat to obtain safety, strength, comfort and good ventilation. Her construction is quite heavy and contains four watertight steel collision bulkheads which will make her practically unsinkable and very strong. The small auxiliary schooner rig will give her steadiness in a seaway and also aid when the wind is fair. In appearance this boat resembles a steamship with quite high bulwarks. From the after end of the deck house to the bow the deck is carried up to the top of the bulwarks, making a raised deck forward. The roof of the cabin trunk aft of this is used as a bridge deck with steering wheel and engine controls near the forward end and the whole protected by awning and rail. A speaking tube leads from the helmsman's position to the engine room for convenience of communication between the captain and engineer.

Special attention has been given to ventilation, all windows being made to open, and hood ventilators are liberally used. Large skylights are fitted over each room, that over the engine room being especially large and built around the stack, to be used as seats. The after deck has no built-up rail or stanchions in order that this deck may be used for fishing. A windlass is provided for raising the anchors and also one aft for pulling the boat off shoals in case of grounding.

The below deck arrangements are well laid out. On account of the boat's extreme beam the rooms are exceptionally large, the large storeroom and iceroom being features. In the forecastle there are berths for four men, with clothes lockers for each, toilet, chain locker, etc. In the forward part of the deckhouse the dining-room is located, with sideboard, china closets, etc., in addition to two extension berths, which may be used for sleeping if necessary. An auxiliary steering gear is also fitted in this room for use in stormy weather. Entrances are provided from the dining-room to the deck and galley, and below is a large storeroom.

Immediately aft the galley is located with the usual fittings, large stove, table, sink, hot water boiler, dumb waiter to the forecastle, etc. Aft of the galley is the engine room, which is separated from the rest of the boat by two steel watertight bulkheads. The motive power consists of two 40 h.p. four-cylinder four-cycle engines. Gasoline tanks, work bench, lockers, auxiliary machinery, bilge pump, water tanks, etc., are located in the engine room also.

The owner's quarters are located in the after portion of the boat and are exceptionally roomy, having accommodations for five persons. There are a large number of clothes lockers, seats, bureaus, etc. Aft of these rooms is another steel watertight bulkhead, aft of which is a lazarette. The boat will carry two small boats, a motor tender and a lifeboat. The design has been carefully thought out from data accumulated for the requirements in warm climates and shoal water, while seaworthiness has not been forgotten or the strength factors overlooked.



Mr. Winslow's design, which resembles a steamship in appearance but planned from the knowledge of the necessary requirements for shoal water.

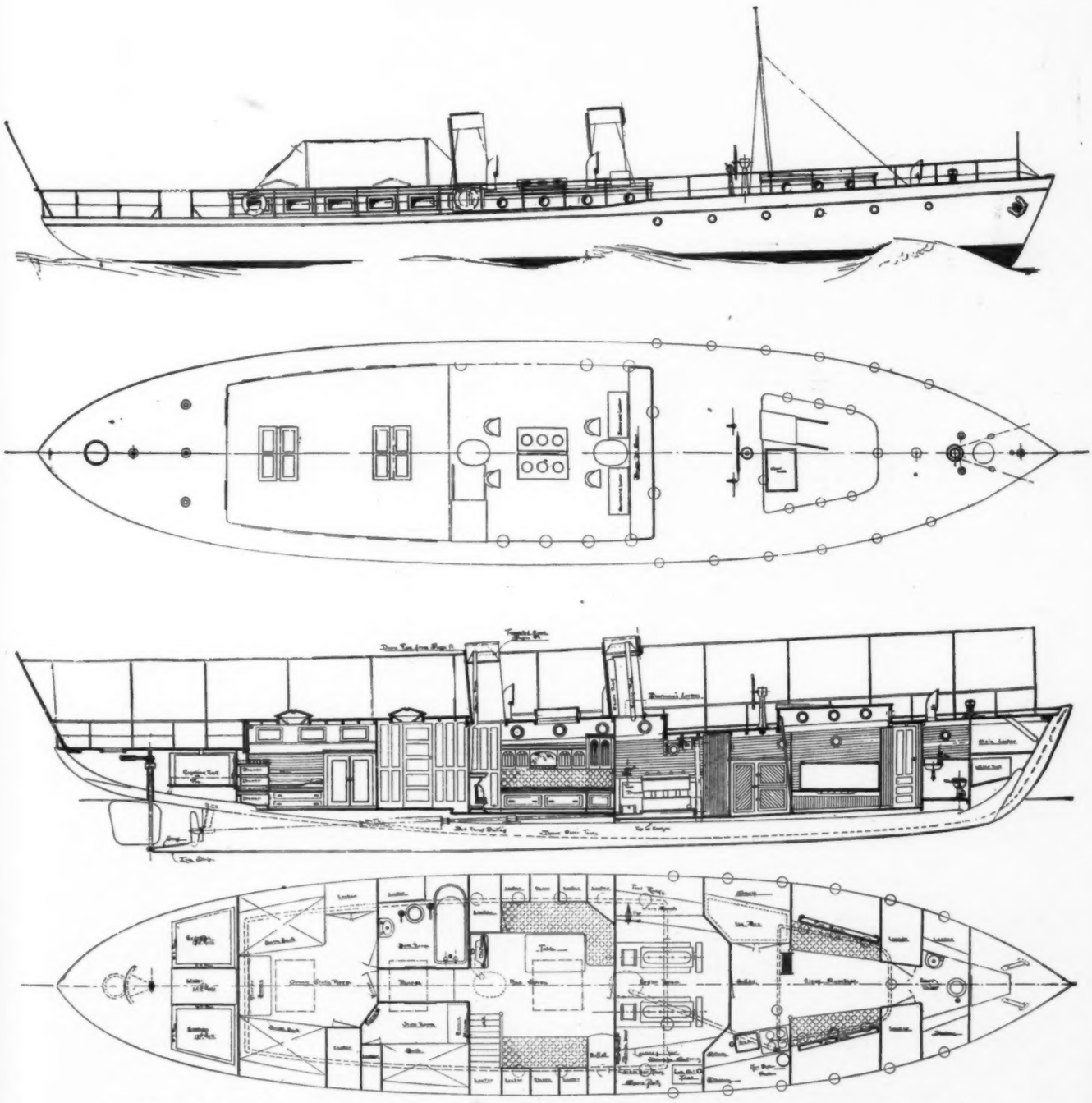
A Twin Screw 72 Footer.

Designed by J. Murray Watts for Use in Florida Waters, Representing the Latest Practice in a Boat of Less than 4 ft. Draft.

HOWARDA was designed for Mr. Howard S. Kerner by Mr. J. Murray Watts, the Philadelphia naval architect, and represents the last word in comfort for a shoal draft cruising motor boat. As the owner uses her mostly for cruising in Florida waters the draft has been kept under 4 feet, while the generous beam of 16 feet gives unusually fine accommodations below.

The arrangement shows a companionway leading from the side deck into the big saloon, with a passageway to the owner's stateroom. On one side of the passage is the bathroom and on the other a guest's stateroom. The engine room is forward and in it are installed two 37 h.p. Standard motors and an auxiliary plant for pumping and lighting. The galley runs the full width of the boat and gives lots of room. The crew's quarters and crew's toilet room are forward. The finish of the owner's quarters is of mahogany, with decorations in the Gothic style. The crew's quarters and engine room are in plain paint. The finish on deck is East India teak throughout.

The boat is steered and controlled from the bridge deck forward. There is full headroom under this bridge deck, the least headroom in the cabins being 7 feet. The engine room and galley are ventilated by the forward stack, which takes the exhaust from the engines and the galley smoke pipe. The after stack ventilates the main saloon in heavy weather when the windows and skylights have to be battened down. This stack also takes the smoke pipe from the fireplace in the saloon. The two stacks on a boat of this size not only improve the ventilation, but give the yacht a very trim appearance. The long low white top-sides relieved by the polished teak of the deck houses set off with the two funnels make her one of the handsomest boats turned out this year.

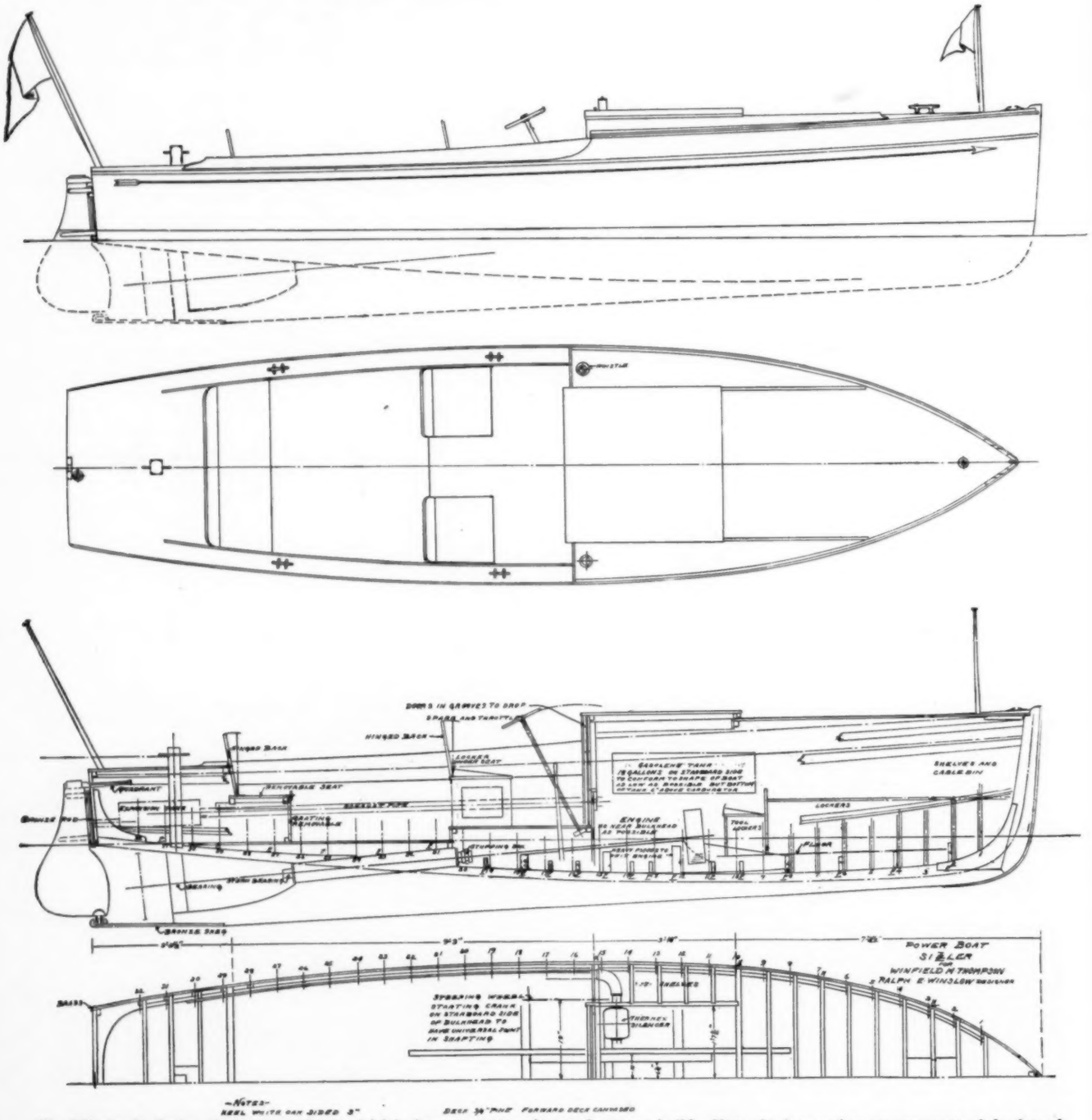


Mr. Watts' design of the 72-ft. cruiser Howarda. Her generous beam of 16 feet gives an exceptionally roomy interior.

A 23-Foot, 11-Mile Runabout.

THE plans of this 23-foot runabout were designed by Ralph E. Winslow, Quincy, Mass., and the boat was built by Decker, of Southport, Me., for Mr. Winfield M. Thompson. She is a combination of the owner's and designer's experiences for a small, useful seaworthy runabout, inexpensive to build and maintain. She had to be seaworthy and strong and able to contend successfully with the choppy tidewaters of Boothbay and its river and vicinity, which while not bad in summer, when tide and wind are opposite, are very choppy. She is a small edition of the raised deck cruiser, and her bow sections have unusual reverse flare and buoyancy, while the whole boat was designed to give a good, easy dry boat with fair lines for speed. Her keel and skeg were brought down to protect the propeller and also cut away to give quick turning. She proved to be a fine, buoyant little boat and was satisfactory in every way. She developed a speed of more than 9½ nautical miles with 10 h.p. engine, which is about 11 land miles.

Her construction is fairly heavy and everything is plain and practical and built for utility. She has seating capacity for six comfortably. Two on the after lazyback seat, two in chairs in cockpit and two on the seats aft of the engine space. She steers with an auto wheel on the port side and all controls are led convenient to the helmsman. The cockpit floor at the forward end is raised so as to enable the helmsman to sit and still be high enough to see easily over the raised deck. Lockers for fishing tackle, sand bucket, fire extinguisher, etc., are under these forward seats, while a passageway between gives easy access forward and aft. Forward of this is the engine space, which is under a big slide which opens up by sliding forward, thus being out of the way, and doors which drop down on the after side into slots and are lifted integrally by an ingenious method into place when closed. This engine space is unusually large and appreciated. The gasoline tanks were on either side, with a total capacity of about 36 gallons. This location kept the weights near the center of the boat and simplified piping. Forward under the raised deck is a storage room for anchor, cables, lanterns, tools, etc., and also room enough for a pipe berth if desired. She is a fine, able, family boat useful for everything, from fishing and towing to errands and joy parties, express, and to catch the steamer and train by. Her dimensions are: length, 23 ft. 6 ins.; beam, 5 ft. 11 ins.; draft, 2 ft. 1 in.



Mr. Winslow's design shows a runabout of fairly heavy constructio n and easy to build. Note the interesting arrangement of deadwood and skeg.

An 85 Foot Elco Motor Yacht.

An Up-to-Date Design that Embodies the Usual High Grade Elco Construction Throughout.

A CRUISING yacht which embodies the latest developments in design and construction is shown below. One of the features of this design is the flush deck pilot house or dining saloon forward and the location of the power plant and fuel tanks amidships where they belong.

Her length is 85 ft.; water line, 76 ft.; beam, 14 ft.; and draft, 3 ft. 6 ins. High grade Elco hull construction; yellow pine single planking copper fastened throughout. The moulded depth of this boat is greater than usual, which permits it to have unusual accommodations and allows for ample headroom forward under the flush deck pilot house. This design thereby permits of an owner's stateroom being placed forward under the dining saloon, quarters for the owner being finished in white enamel with mahogany trim and furniture, and by means of large ports, deck lights and ventilators, the ventilation and light of this compartment will be all that could be desired.

The dining saloon on deck has full headroom and is entered direct from the deck. This dining saloon can accommodate a large party and is finished in selected mahogany, enclosed with plate glass windows dropping into pockets, mahogany buffet with stairway leading to owner's stateroom below.

Aft of the dining saloon and on the same deck is located the galley, which has the usual equipment of stove, porcelain sink, cupboards and lockers and porcelain-lined icebox. Directly below the galley is located a mess and storage room with auxiliary icebox, which can be filled directly from the main deck. This arrangement has proved very satisfactory and with the galley on deck unusual light and ventilation is afforded, while below within convenient reach by dumbwaiter and hatch, is located the messroom for the crew and extra space for carrying stores.

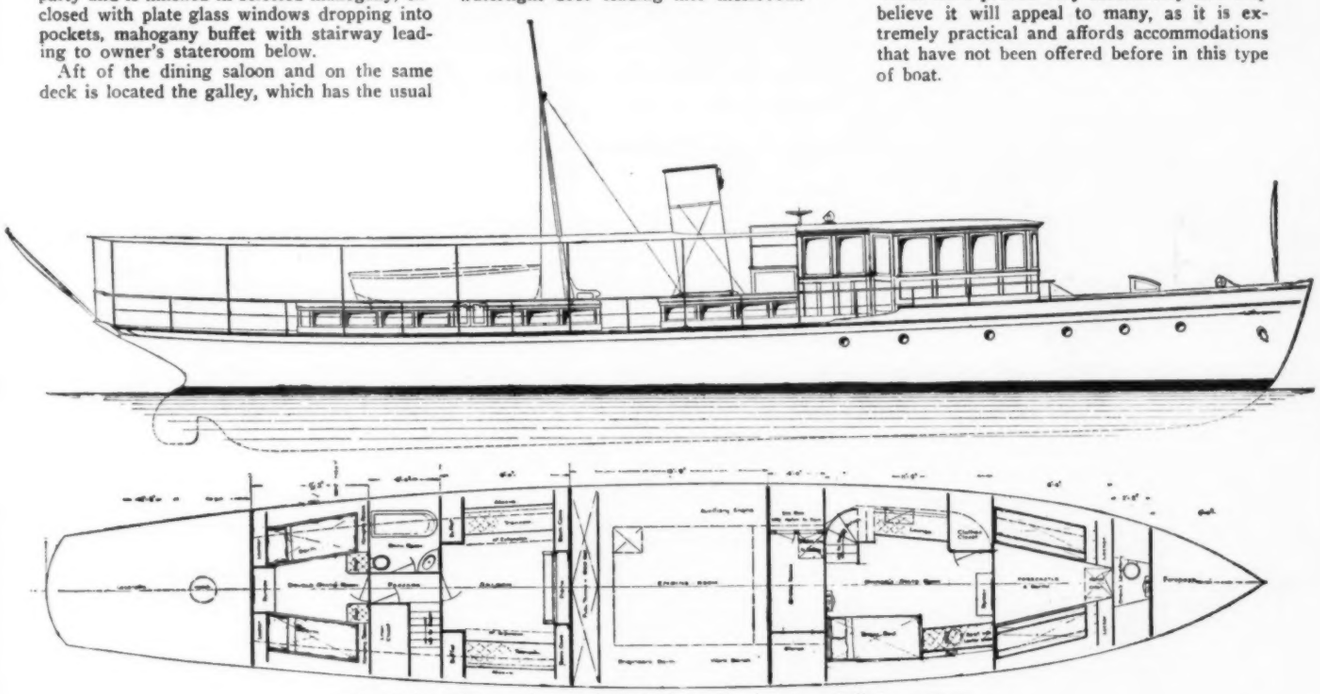
The forecastle is forward and arranged for sleeping four men comfortably, with berth for a captain's stateroom if desired and a lavatory adjacent. The engine room located amidships is ample for the twin screw equipment of engines of 100 h.p. each, which will give the boat a speed of 15 miles an hour. The gasoline is tanked athwartships, the latest Elco system of installation being employed, with tanks located in copper-lined compartment with drains to the sea, tanks being filled from on deck, affording the maximum safety in handling and storing the gasoline. The engine compartment has watertight bulkhead at both ends, with watertight door leading into messroom.

The owner's quarters aft can be arranged to suit the purchaser. In the plan shown a large saloon is located forward, with side transoms, space for piano, desk, full length lockers, etc. The bathroom is conveniently arranged alongside of the companionway opposite from which is a single stateroom with double stateroom aft. In all, comfortable sleeping accommodations are provided for five in this arrangement.

The interior of these quarters can be finished in white enamel and mahogany trim or throughout in mahogany. Ample light and ventilation is provided with the trunk cabin house, exterior of which is finished in mahogany. Large after deck space is provided and the bridge forward is so arranged as to give a commanding view of the boat from stem to stern.

Elco system of plumbing is installed, giving hot and cold water to the lavatories, water flowing by gravity.

The company has built boats of this design which have proved very satisfactory and they believe it will appeal to many, as it is extremely practical and affords accommodations that have not been offered before in this type of boat.



The 85-foot Elco cruiser with flush deck pilot house and dining saloon.

An 80 Horsepower Motor Tug.

ONE of the late additions to the Crowley Launch & Towboat Co. is the Crowley No. 21, and her plans will show that she was built for towing only, every feature of her design and arrangement tending toward efficiency and handiness in this respect.

The Crowley No. 21 was designed by D. W. and R. Z. Dickie, of San Francisco, and built by W. G. Tibbets & Co., of Alameda. The conditions of the new law, which restrict length rather than tonnage, were taken advantage of and she was given 30 inches of freeboard instead of 20 inches or less as was the case in boats built under the old 15-ton law, which makes her dry in rough weather.

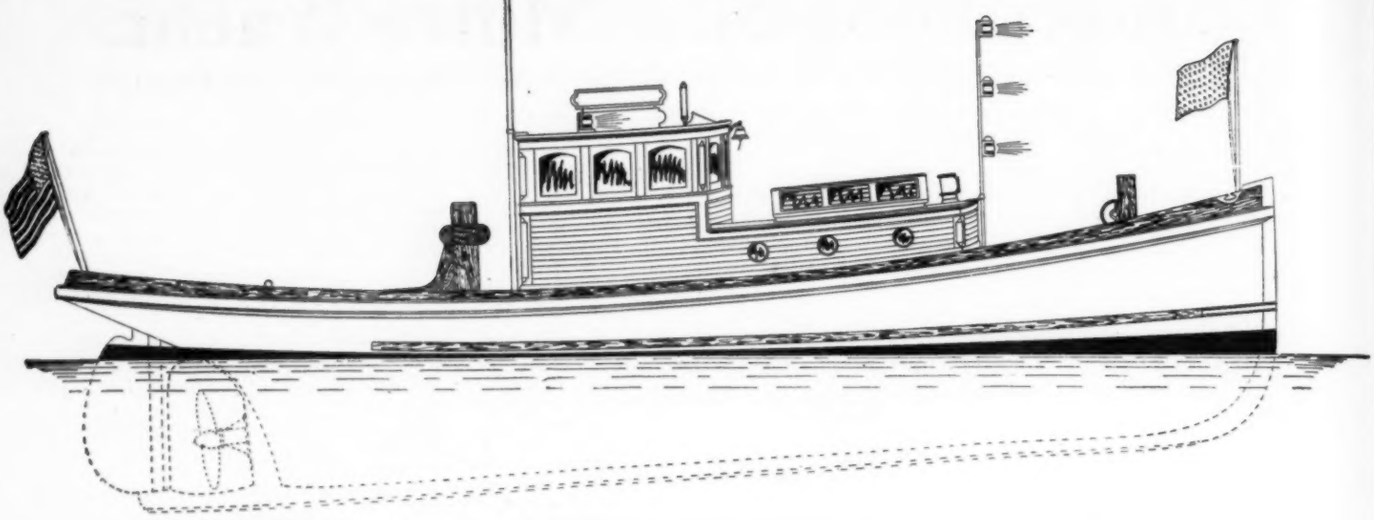
Some of the new features were a towing bitt with a 9-inch saddle in order to save expense in lines, also a cast iron riding bitt forward with a power capstan. In order to meet the requirements of the Board of Marine Underwriters, a 6-inch Dow centrifugal pump was installed, which is arranged to engage the flywheel and can be used to flood or pump out a vessel.

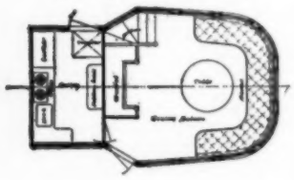
The two main fuel tanks hold about 400 gallons of fuel each and are built according to the rules of the U. S. Boiler Inspectors and equipped with an air pressure attachment, which forces the distillate from the large tanks to the small tank in the forecastle for gravity feed.

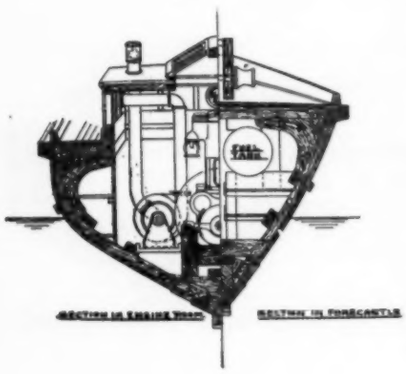
A low house covers the engine and a large roomy pilot house shelters the operator and also provides a bed in case of a long tow. This is done by folding out the seat and taking out the bedding from under it. The windows, door and skylights are glazed with 5/16-inch French plate glass. A complete system of ventilation is installed to prevent the accumulation of gas in any part of the hull.

A complete auto control system is fitted on a stand in the pilot house, which steers the boat and controls the engine, both the spark advance and governor being led to this point.

The motive power of the Crowley No. 21 is an 80 h.p. three-cylinder Union gas engine, with cylinders 9¾ ins. diameter and 12 ins. stroke fitted with a patent heater on the intake pipe, made by the Union Gas Engine Co., of San Francisco, which gives great elasticity to the control of the engine; the revolutions of the engine can be educed to 42 tuns without stopping, also the engine can be run on low grade fuel.

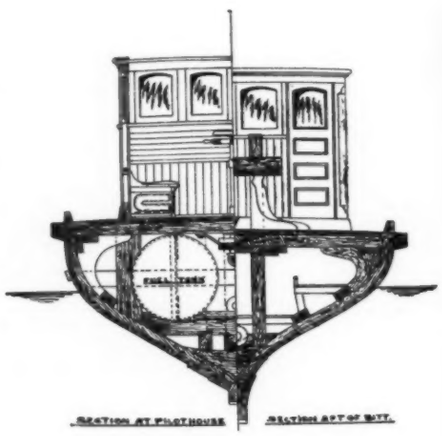


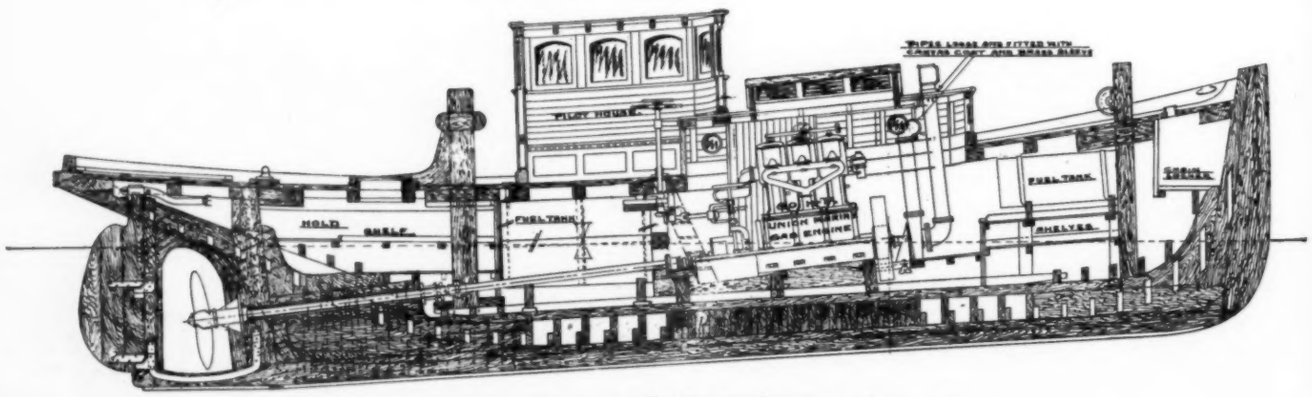


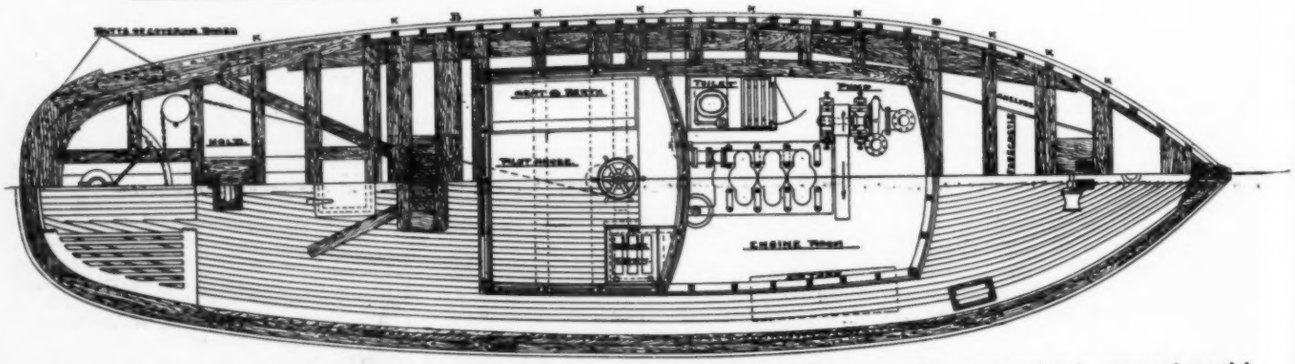


Dimensions of Crowley 21

Length overall	50 ft. 5 ins.
Displacement length	44 ft. 2 ins.
Beam moulded at the waterline	12 ft. 6 ins.
Beam over plank at deck	14 ft. 1 in.
Crown of beam amidships, 2 ins. in 13 ft. 9 ins.	
Draft forward at the forefoot	3 ft. 10 ins.
Draft aft at stern post	6 ft. 0 ins.
Freeboard at lowest point of sheer	2 ft. 4 ins.
Sheer forward	3 ft. 10 ins.
Sheer aft	1 ft. 0¼ ins.
Depth of hold	5 ft. 2 ins.







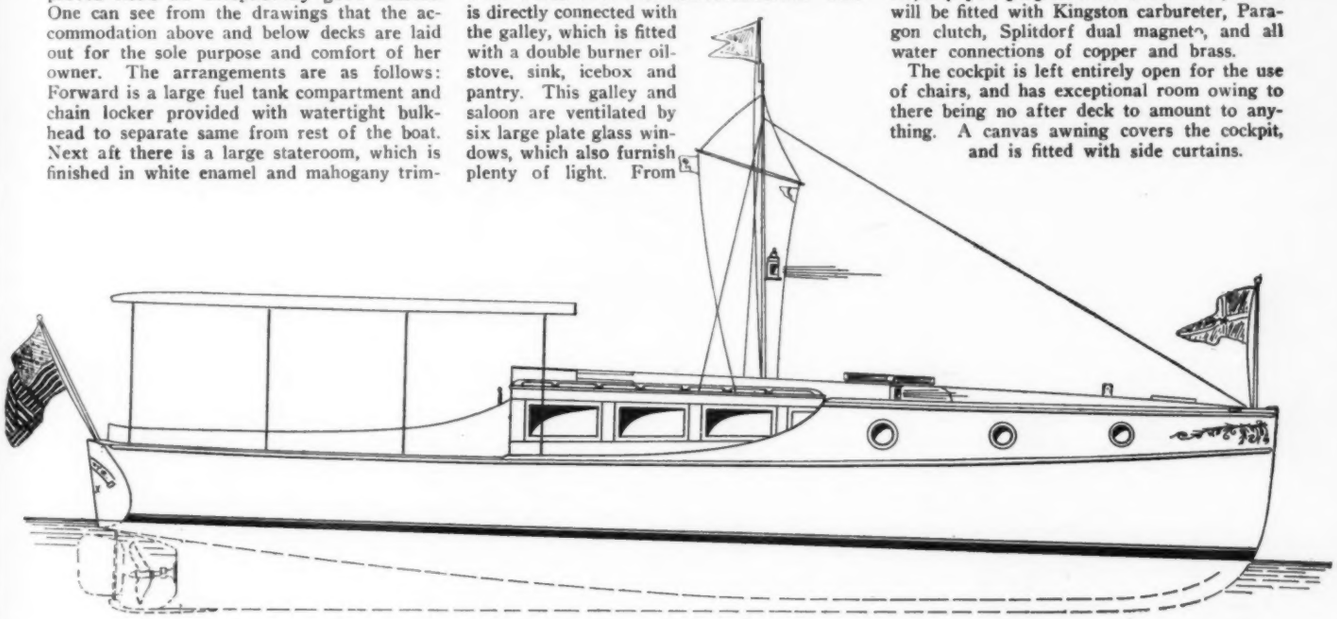
Crowley No. 21, one of the latest additions to the Crowley Launch and Tow Boat Company. Her construction is most substantial.

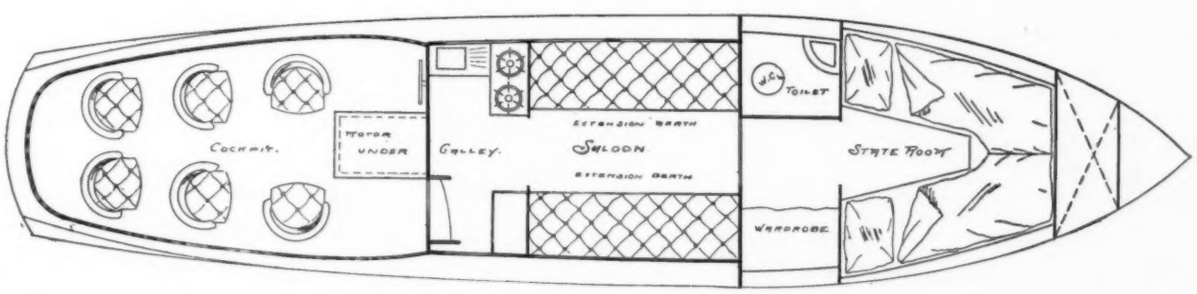
A Thirty-Five Foot Motor Cruiser.

A Design Which Embodies the Refinements and Requirements That are Always Found in Those of the Reliance Boat Company of New York City.

THE design below is of a 35-foot cruiser which we believe embodies all the refinement that has been found desirable in a boat of this size, and of a type that has proved itself an exceptionally good seaboat. One can see from the drawings that the accommodation above and below decks are laid out for the sole purpose and comfort of her owner. The arrangements are as follows: Forward is a large fuel tank compartment and chain locker provided with watertight bulkhead to separate same from rest of the boat. Next aft there is a large stateroom, which is finished in white enamel and mahogany trimming and fitted with double berth, toilet and double wardrobe; stateroom is ventilated by six large swing ports. From here we enter the main cabin, which is fitted with upholstered sofas which when extended form berths. This is directly connected with the galley, which is fitted with a double burner oil-stove, sink, icebox and pantry. This galley and saloon are ventilated by six large plate glass windows, which also furnish plenty of light. From this cabin through a sliding companionway, we enter the cockpit, which is large and commodious and will easily accommodate eight people. In this cockpit is also located the motor, a 4-cycle 5 x 5 Reliance-Continental, which will be fitted with Kingston carbureter, Paragon clutch, Splitdorf dual magneto, and all water connections of copper and brass.

The cockpit is left entirely open for the use of chairs, and has exceptional room owing to there being no after deck to amount to anything. A canvas awning covers the cockpit, and is fitted with side curtains.





The layout of the Reliance 30-footer was planned for comfort.

A 94-ft. Twin Screw Motor Yacht.

A Swasey, Raymond & Page Design Having a Speed of 12 Miles With a Draft of Only 3 Feet and 9 Inches.

THE plans of the 93' 6" twin-screw motor boat, which we are publishing, were designed by Swasey & Page, Inc., of Boston, for a Cleveland, Ohio, yachtsman. This yacht will be built early this winter and spring. She is of the steamship type with plumb stem and round counter stern, which is being used on many of the larger types of yachts.

Her draft has been kept as small as possible and still obtains seaworthiness without the use of tunnel. All her dimensions were figured upon going through the new New York State ship canals easily.

The motor equipment will consist of two 65-75-h.p. engines driving twin screws, which will give her a speed of not less than twelve miles an hour. Her length over all is 93' 6"; water line 88' 9"; extreme beam 15' 6" and draft 3' 9".

The arrangements were designed as laid out by the owner and are rather novel and somewhat unusual. Special attention has been given to good quarters for the crew, who use the boat more than any other persons and who have to live aboard all the time.

The gasoline tanks, which hold about 1,200 gallons, are put into steel water and gas-tight compartments ventilated by ejector ventilators which draw all gases out of these compartments. The vessel has three watertight bulkheads with no openings and two more watertight bulkheads with watertight doors so that any event of collision would make her unsinkable.

Her arrangements on deck are quite unusual for a boat of this size. The deck house is larger but not unsightly and contains a large dining or living room, galley and vestibule. On the deck of this house is a large bridge. All engine controls are led to the wheel on this bridge, as well as a small switchboard, so that engines and lights may be controlled from the bridge as well as from the engine room.

Directly below the galley is the mess room and also a room for the steward. This mess room is unusually large and has store rooms for owner's and yacht's supplies, being placed very conveniently, so that the work of feeding the crew, owner and guests will be as simple as possible.

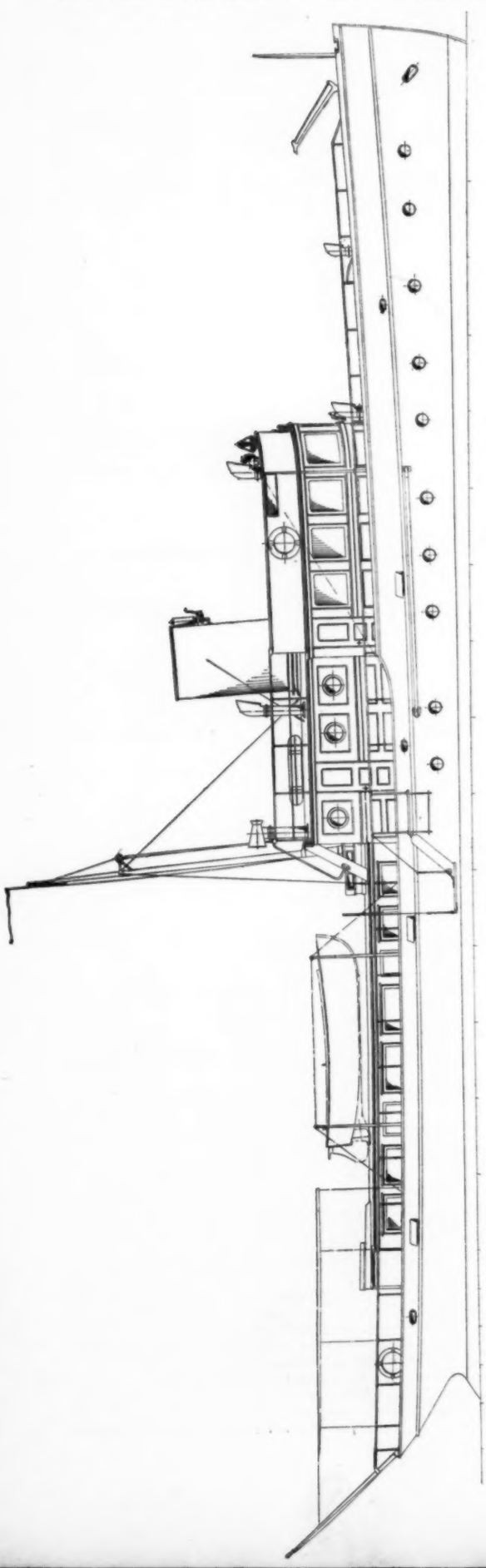
Directly below the dining room is the engine room which contains the aforesaid engines, also electrically operated bilge, fire and force pump, electric machinery, switchboard

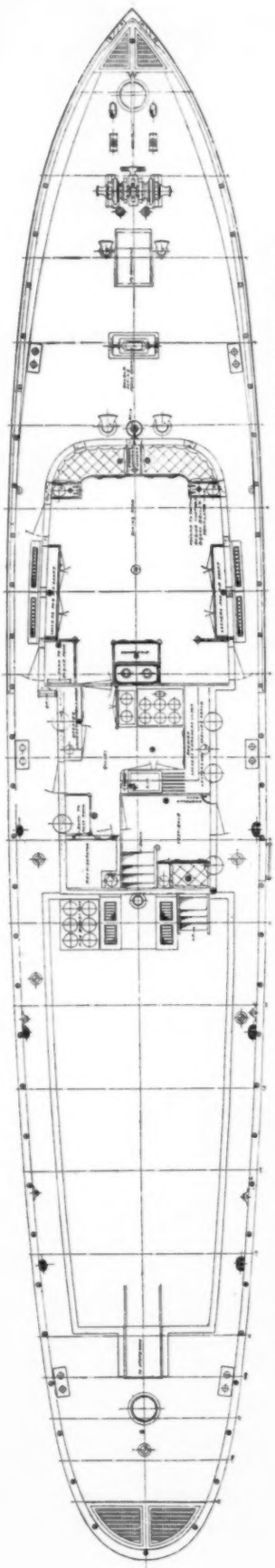
and all other auxiliary machinery. The exhausts from the engine are carried up by water-jacketed exhaust pipes through a steel casing into the stack and special attention has been given to ventilating this engine room. A gravity water tank will be in the stack aft of the mufflers. Forward of the engine room is the captain's stateroom, a large store room, forecastle for three men and crew's toilet room. Attention has been given to this part of the boat to give plenty of lockers for clothes and other supplies of the crew.

A clear passageway by use of watertight doors in the steel bulkheads has been obtained from the forward collision bulkheads to the bulkhead aft of the mess room.

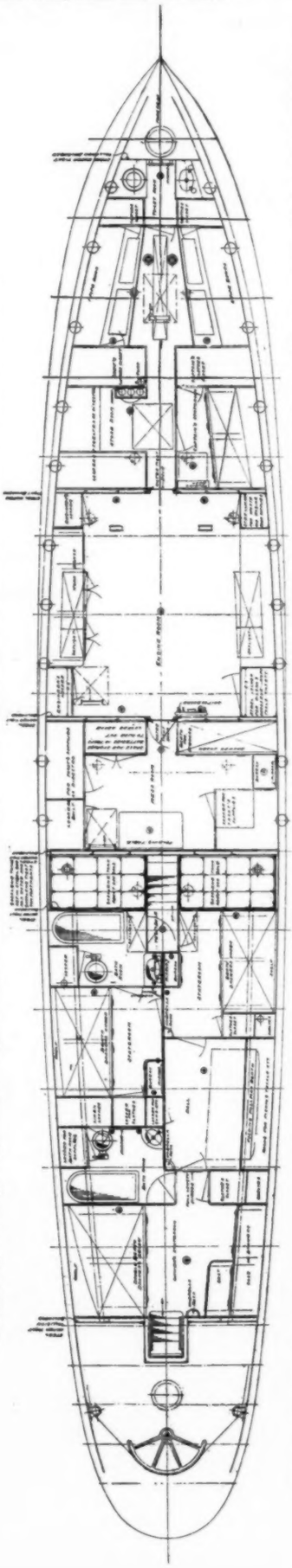
The after quarters of this boat were laid out according to the exact requirements of the owner. There is an extra room or hall, which will be used as an extra stateroom; also a room for keeping guns, fishing tackle, photograph supplies and a dark room, and many other things when the boat is used on camping and hunting trips.

She will have two boats, a launch and life boat, and her equipment throughout will be of the best. She will be provided with electric lighting plant, searchlights, electric fans and heaters. Running water is provided in every stateroom and bathroom. The entire craft has the appearance of a powerful ocean-going steam yacht with her steamship stern, plumb stem, stack and one mast.





Designs by Swasey, Raymond & Page always have an exceedingly classy appearance, and that of the above 93-footer is no exception.



The plumb stem and round counter-stern of the Swasey, Raymond & Page 94-footer, which are now being used on many of the larger types of motor yachts, give her the appearance of a steamship.

An Elco Speed Cruiser.

A Unique Design by the Electric Launch Company of Bayonne, N. J., With Below Deck Arrangements Out of the Ordinary.

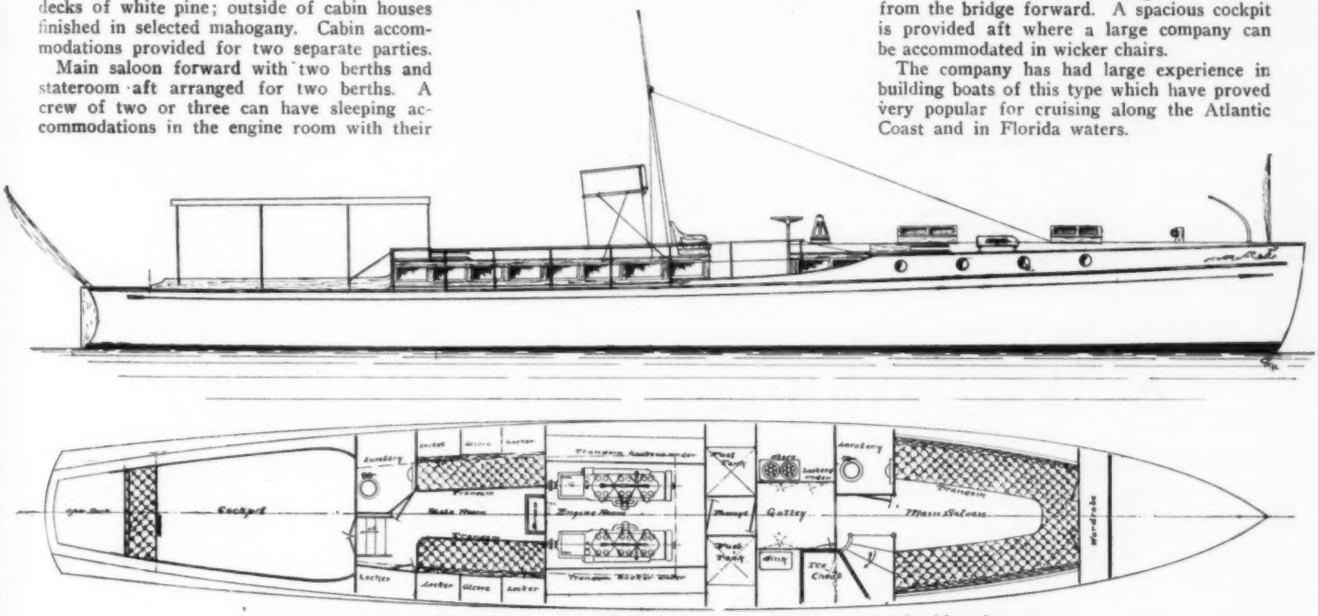
A TWIN screw express cruiser, a unique design, affording excellent accommodations for two parties besides the crew. Length overall 61 ft., waterline 60 ft., beam 9 ft. 6 in., draft 3 ft. Highest grade ELCO hull construction, cedar planking copper fastened; decks of white pine; outside of cabin houses finished in selected mahogany. Cabin accommodations provided for two separate parties.

Main saloon forward with two berths and stateroom aft arranged for two berths. A crew of two or three can have sleeping accommodations in the engine room with their own lavatory. The interior finish of the boat is in white enamel, with mahogany trim and furniture. The quarters forward are well arranged for day use and for cruising, with saloon and galley adjacent, where meals can be served.

The engines are located amidships and room is provided for two 60 h.p. 6 cylinder engines which will give the boat a speed of 16 miles an hour.

This boat can be handled easily by two men, as the boat is steered and engine controlled from the bridge forward. A spacious cockpit is provided aft where a large company can be accommodated in wicker chairs.

The company has had large experience in building boats of this type which have proved very popular for cruising along the Atlantic Coast and in Florida waters.



61-ft. Elco speed cruiser with accommodations for two separate parties besides the crew.

Josephine II, a Sixty-Five Footer.

A Fine Example of Bridge Deck Cruiser Designed by Carlton Wilby.

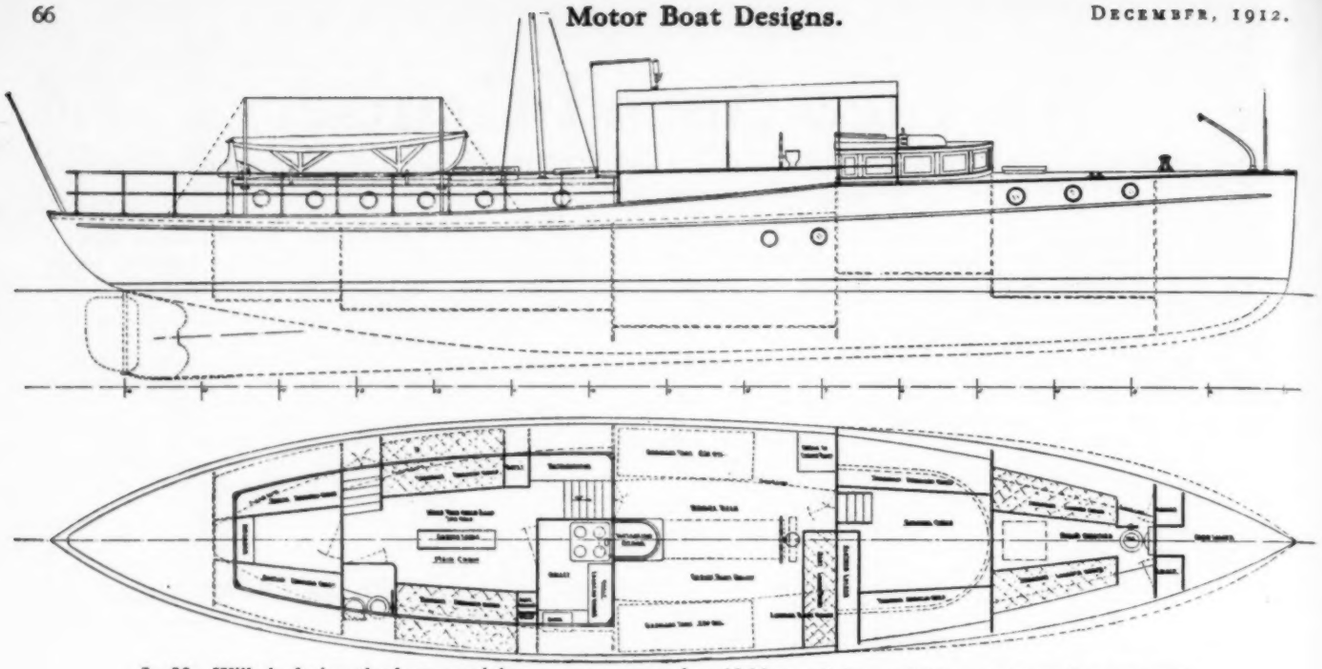
JOSEPHINE II is a fine example of the bridge deck cruiser type which is becoming very popular on the Great Lakes. She was built this Spring by The Bosserdet Yacht & Engine Company, for Mr. August Kling, from designs by Carlton Wilby of Detroit, and is one of the most notable recent additions to the fleet of the Detroit Motor Boat Club. The plans shown herewith give a good idea of the arrangement and appearance of the craft and show that she is a "good looker" as well as a comfortable and commodius cruiser.

A feature of the arrangement that will immediately appeal to the experienced motor boat man is the location of the engine and fuel near the center of the boat. This concentration of the heavy weights amidships is essential to secure those seaworthy qualities so necessary to the successful cruiser. The model of the hull is also well adapted to sea work, being provided with good draft, ample deadrise, fine ends, and good reverse flare above water in the forward sections. The stern is of the compromise or whaleboat type, considered the best for sea work, but on account of its tendency to drag, or squat, is not always adopted. In this respect Josephine II is unusual, for even at her maximum speed of almost 12 miles, which is high for a heavy, beamy boat of her type, she drags almost no wave at the stern and shows very little change of trim.

Starting at the bow the arrangement below deck shows a large chain locker and aft of this the crew's quarters fitted with two berths, toilet, lavatory, and clothes lockers, this compartment being entered from a hatch on deck. The forward cabin comes next, with two transom berths, lockers, etc., all richly finished in mahogany, and entered by steps from the bridge. The bridge deck, which is almost 12 feet long and the full width of the boat is a fine commodious place for chairs where a large party can be easily accommodated and where a view can be had in every direction. Although the engine room is located directly below this deck, practically no vibration or noise from the motor can be detected by persons seated here. This speaks very well for the construction of the boat and also for the engine, a 54 h.p., 6 cylinder, heavy duty Buffalo, which drives the boat close to 12 miles per hour, which is good going for a craft of 27 tons displacement and better than 12 ft. water line beam. The engine is segregated from the rest of the ship by double water tight bulkheads forward and aft, and everything pertaining to the engine is contained in this compartment. The engine room is entered by a hatch from the bridge deck and is ventilated by the stack, which also serves to conceal the smoke pipe from the galley stove.

Josephine II, designed by Carlton Wilby and owned by August Cling, of the Detroit Motor Boat Club.

The main cabin house is entered by steps from the bridge deck and is finished in mahogany throughout. A large galley is located at the forward end on the starboard side and equipped with every convenience. The main cabin itself is fitted with two double berths and a large clothes locker and buffet.



In Mr. Wilby's design the heavy weights are concentrated amidships and the model is well adapted to sea work.

A Thirty-Five Foot Cruiser.

A Boat Now Being Built by the W. F. Ruddock Boat and Yacht Works, New York City, for a New York Yachtsman.

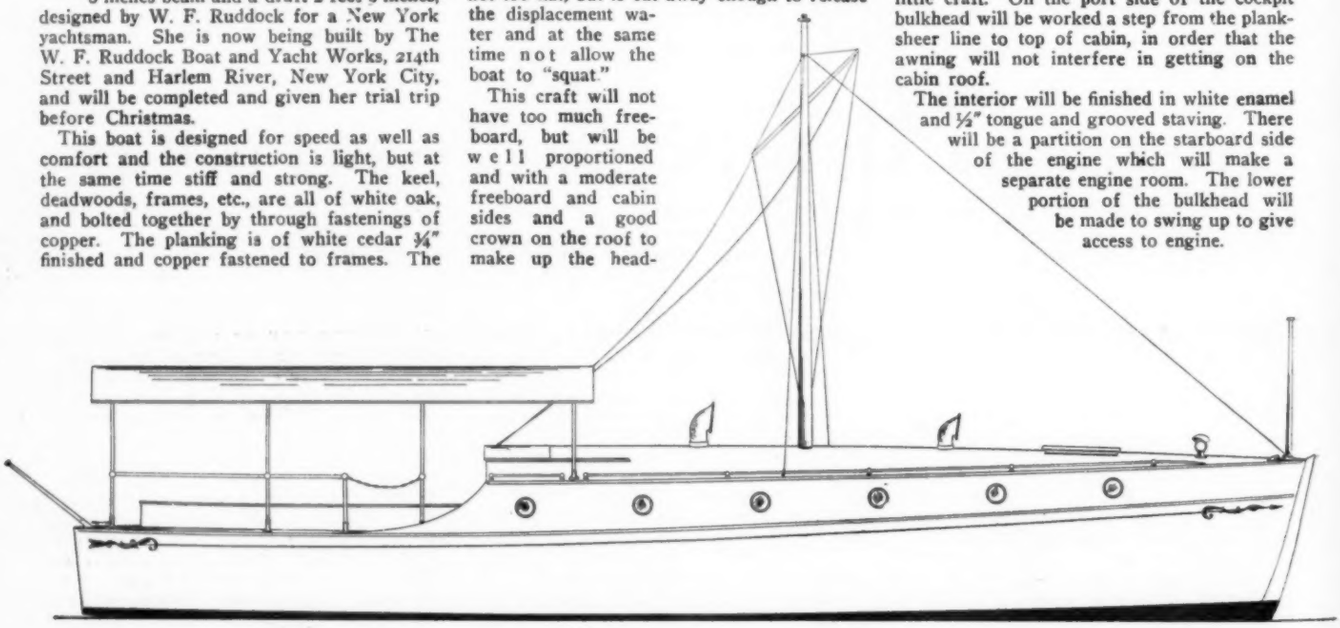
THE accompanying plans are for a cruising power boat 35 feet long by 8 feet 6 inches beam and a draft 2 feet 0 inches, designed by W. F. Ruddock for a New York yachtsman. She is now being built by The W. F. Ruddock Boat and Yacht Works, 214th Street and Harlem River, New York City, and will be completed and given her trial trip before Christmas.

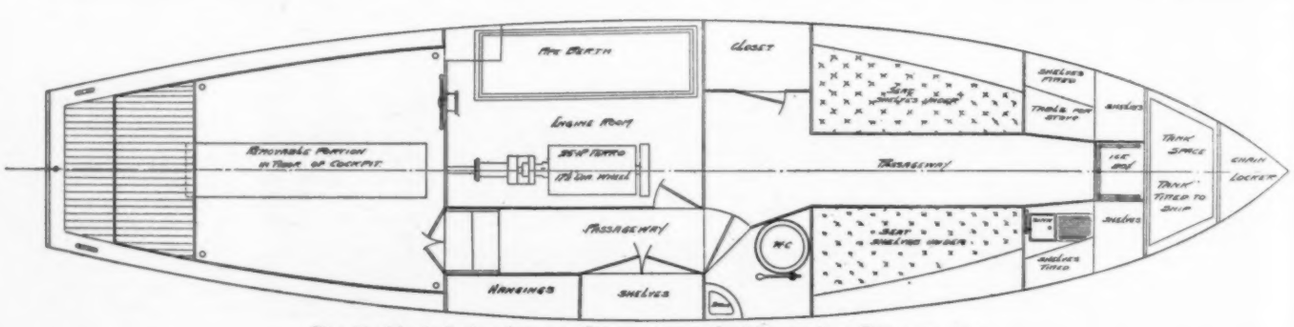
This boat is designed for speed as well as comfort and the construction is light, but at the same time stiff and strong. The keel, deadwoods, frames, etc., are all of white oak, and bolted together by through fastenings of copper. The planking is of white cedar ¾" finished and copper fastened to frames. The model was given considerable attention. She has very fine lines forward and the stern is not too flat, but is cut away enough to release the displacement water and at the same time not allow the boat to "squat."

This craft will not have too much freeboard, but will be well proportioned and with a moderate freeboard and cabin sides and a good crown on the roof to make up the headroom, will give the boat a rakish appearance.

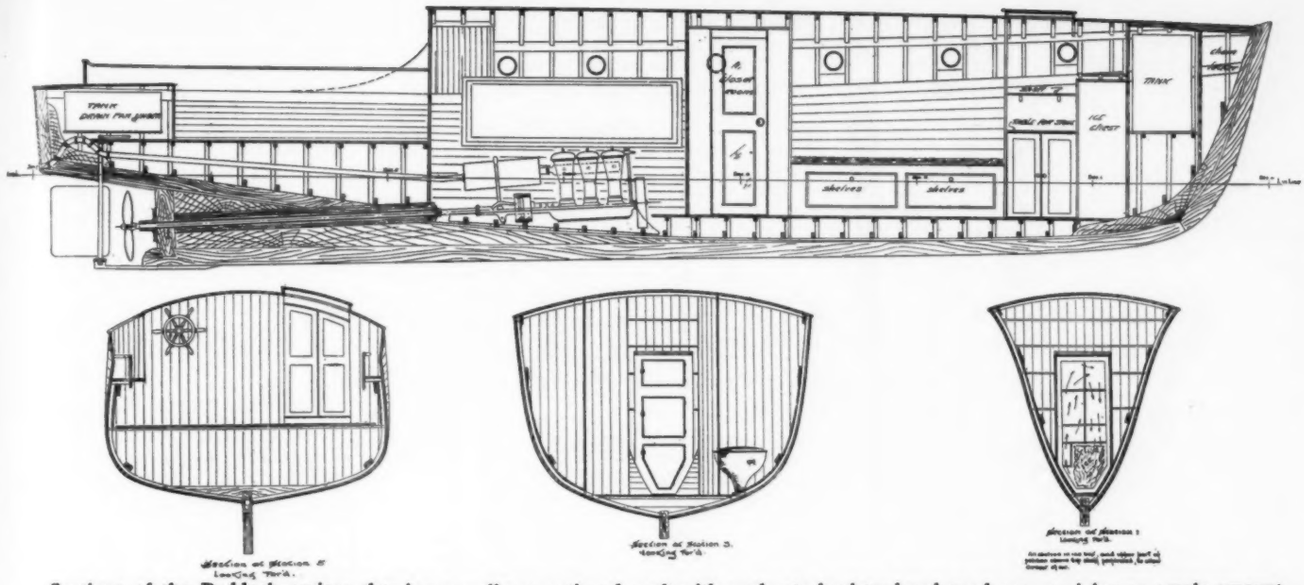
There are many unusual features in this little craft. On the port side of the cockpit bulkhead will be worked a step from the plank-sheer line to top of cabin, in order that the awning will not interfere in getting on the cabin roof.

The interior will be finished in white enamel and ½" tongue and grooved staving. There will be a partition on the starboard side of the engine which will make a separate engine room. The lower portion of the bulkhead will be made to swing up to give access to engine.





The Ruddock design for a 35-footer powered with a 25-h.p. Ferro m otor.



Sections of the Ruddock cruiser showing a well-proportioned craft with moderate freeboard and good crown, giving an ample amount of headroom.

A 1913 Defoe Cruiser.

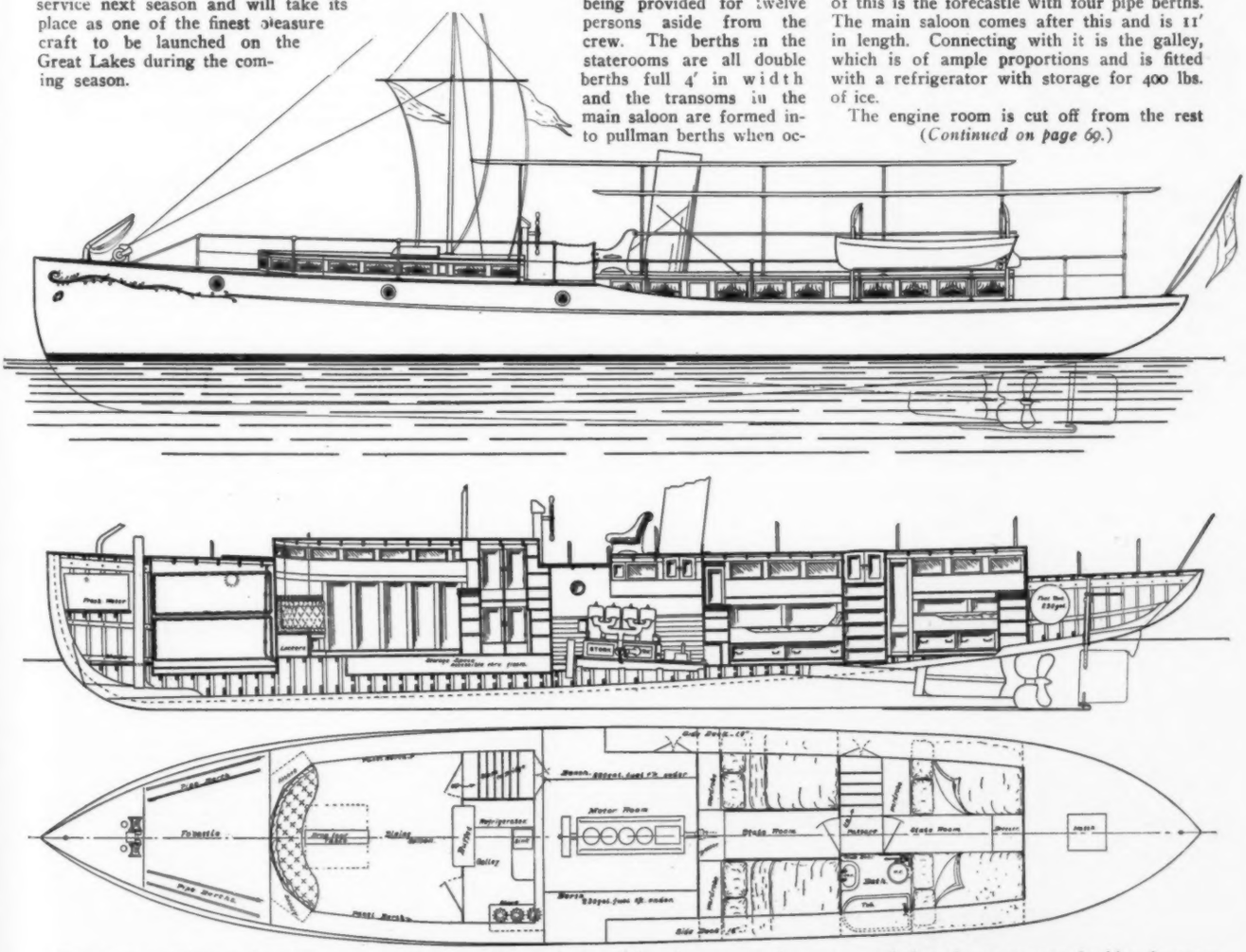
THE accompanying lines are those of a boat designed by the Defoe Boat and Motor Works and now under construction at their plant. It will be ready for service next season and will take its place as one of the finest pleasure craft to be launched on the Great Lakes during the coming season.

The construction of the hull is especially heavy throughout. The designs shows extensive accommodations for cruising parties, sleeping accommodations being provided for twelve persons aside from the crew. The berths in the staterooms are all double berths full 4′ in width and the transoms in the main saloon are formed into pullman berths when occasion requires and accommodate an additional four people.

In the extreme bow is located the chain locker and a 200-gallon fresh-water tank. Aft of this is the forecastle with four pipe berths. The main saloon comes after this and is 11′ in length. Connecting with it is the galley, which is of ample proportions and is fitted with a refrigerator with storage for 400 lbs. of ice.

The engine room is cut off from the rest

(*Continued on page 69.*)



The Defoe cruiser is heavily constructed throughout and the design shows extensive accommodations for 12 persons besides the crew.

The 115-ft. x 17-ft. cruiser designed by Whittelsey & Whittelsey, of New York City, for a Western yachtsman. The design shows a vessel of the raised deck type with bridge, sunken house and large amount of deck room.

(*Continued from page 67.*)

of the boat by absolutely water tight and gasoline tight bulkheads. The power plant is a 4 cylinder, 4 cycle heavy duty Stork motor having a bore of 7½" and a stroke of 9". It develops its power at 375 r.p.m.

Aft of the engine room are located two very roomy staterooms with bath and companion way between.

All exterior joiner work is of solid mahogany. The main saloon is finished in solid mahogany as are also the owner's stateroom aft and the aft companion way.

The bath room is finished in white enamel panels and the forward stateroom in white with a fine gilt trim.

Hot and cold water is piped to all lavatories, and the galley sink, and the boat is also fitted with a hot water heating system, radiators being located in all compartments.

A very complete electric light system is to be installed consisting of generator, storage battery and full switchboard equipment.

The power plant is worthy of special mention. As stated above it is a Heavy Duty Stork Motor equipped with dual system two spark Bosch magneto.

The boat is capable of sustaining a cruising speed of twelve miles per hour and is a good one for general cruising.

A Raised Deck 115-Footer.

An Up-to-Date Design by Whittelsey & Whittelsey of New York.

THE vessel shown on the opposite page was lately designed for a Western yachtsman by Whittelsey & Whittelsey, of New York.

She is a raised deck type vessel with sunken house forward, followed by a bridge, which in turn is followed by the engine hatch and funnel. On the after deck is located a large after deck saloon. It is the intention to use the forward house as a dining saloon with the pantry in the after end, and finished same in solid African mahogany complete in all respects. The after deck saloon will be finished in the same manner and used as a lounging room and music room. In the lay-out below decks the general practice of these designers has been followed and the crew and galley are forward. The galley is large and has a large icebox, storage space, etc. The engine room is a good space and ample for the installation of two 150 h.p. motors and electric generating plant. The fuel tanks in a water-tight compartment follow the engine-room. The sleeping quarters are in the after part of the vessel and will be finished in solid mahogany berths, berth fronts, doors, etc., and white enamel bulkheads and ceiling panels. The owner's stateroom is located in the after part of these quarters and is a very large and commodious space. It is laid out after the plans of the "Elmasada II," which is 110', built this last year. The other sleeping quarters consist of four staterooms beside the owner's and two large bath rooms. Large storage rooms are also provided.

The boat is divided into seven water-tight compartments by transverse water-tight bulkheads and it is estimated that the vessel will be safe with any compartment flooded. The furnishings and equipment will be complete and she will be one of the handsomest boats of the coming season.

143-Foot Motor Houseboat.

A Design by Gielow & Orr of New York City for a Craft that will be a Step in Advance of Anything Yet Built.

AT the mention of the word houseboat the thoughts of most of our readers will fly to the "silvery Thames" where house boating has been a feature for many years and where it is markedly in evidence during the height of the Summer season, particularly during Henley Regatta week. The mental picture presented is that of a barge with a light wooden superstructure, surmounted by an awning or shade deck, with comfortable and roomy accommodations or quarters within. A craft without motive power, moored at different points along the picturesque reaches of the stream.

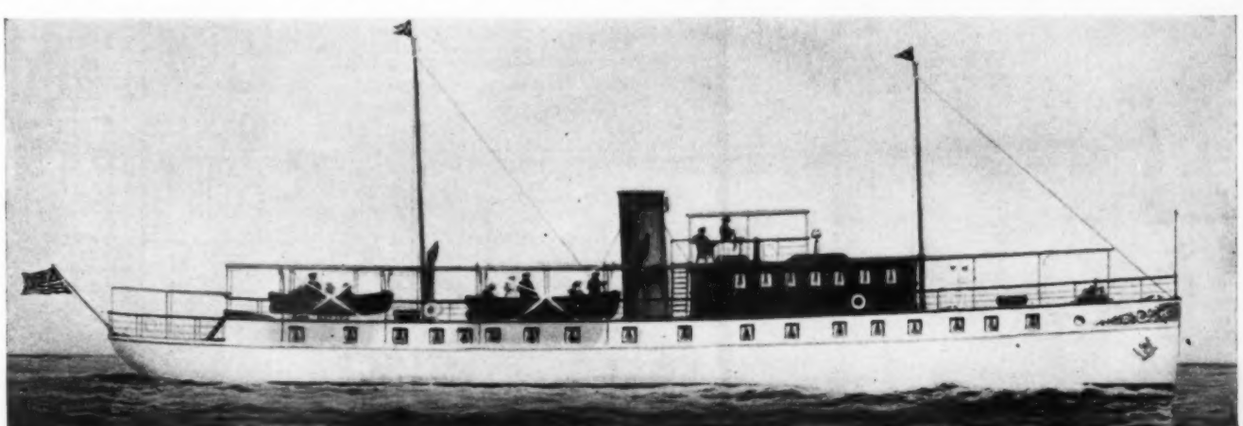
Here in the United States, with our great distances, diversity of cruising grounds ranging from the picturesque shores of Long Island Sound and the New England Coast down to the sunny lagoons and shallow streams and inland bays of Florida and on the waters of the chain of great inland lakes, new conditions have presented themselves, requiring a craft combining seagoing qualities of a good motor yacht with the more material comforts of a houseboat. Light draught is essential for Winter cruising in Southern waters, and a fair amount of speed and seagoing qualities are also required to enable the owner to make the long runs between the Winter and Summer cruising grounds.

Messrs. Gielow & Orr, of New York City, have designed a number of craft of this type, their first in 1897, and the last one, the Marigold, 95 feet long, completed last May. Their success with this type has resulted in their receiving an order for a new craft that will be a step in advance of anything yet built.

The new design shown on the next page will have an over all length of 143 feet; length on loadwater line 135 feet; beam 22 feet, and 4 feet draught when fully loaded. She will be constructed of steel, the side plating being carried up to the upper deck, with steel deck beams and diagonal strapping, thus securing a thoroughly substantial construction. Her lines are a combined perfection of seagoing qualities with a minimum of draught, and were it not for the rectangular windows, would show all the characteristics of a seagoing motor yacht. These windows, however, add so much to the owner's comforts, both as to light and ventilation that it was considered best to use them instead of the much smaller, conventional circular air ports. They are provided with solid steel shutters arranged to lock securely in a seaway.

The deck house is 31 feet long, with a mean width of 15 feet, constructed of mahogany panel work. In the after end is a chart room 5 feet fore and aft and extending full width of house; the balance of the deck house is fitted up as a social hall with divans, pianola, etc., with stairway aft on port side, leading down to owner's and guest's quarters. These occupy the forward end of the vessel its entire width and for a fore and aft distance of 51 feet. The owner's stateroom is in the forward end, and has a floor space of 210 square feet, fitted with twin brass beds, divans, chiffonier, bureau, mirrors, etc., and

(*Continued on page 71.*)



The Gielow & Orr motor houseboat. She will be built of steel and completed in the spring of 1913.

Plans of the 143 ft. steel houseboat powered with three 100-h.p. motors giving a maximum speed of 12 knots on a fuel consumption of 2.7 gallons of gasoline per mile.

(*Continued from page 69.*)

has large and ample wardrobe, etc. Forward of this stateroom is the owner's dressing room and bath, fitted with porcelain lavatory, bath tub, etc., and open nickel plated plumbing throughout. Aft of the owner's stateroom are five more state rooms, two bath rooms, a large vestibule, with stairs leading to deck house, and a passage on starboard side leading aft to the dining room.

The machinery space comes next and occupies the full width of the vessel for a distance of 21 feet fore and aft.

The dining room is immediately aft of the machinery, having a floor space of 290 square feet; and is fitted with extension table, buffet and side board, serving tables, china and linen closets, etc., complete. Next comes the galley and pantry with a combined floor space of 150 square feet, fitted with range, dish racks, dressers, lockers, sinks, storage, etc.

Aft of this are the officers' and crew's quarters, all designed on a liberal scale, occupying a floor space of 500 square feet.

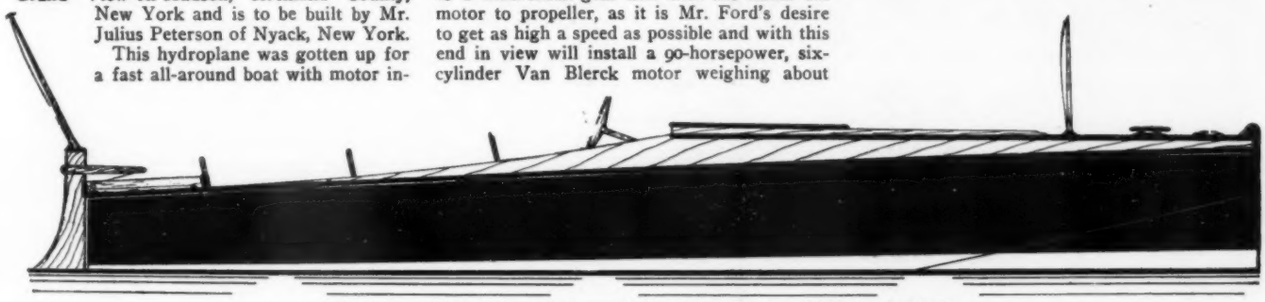
The propelling machinery consists of three 100 horse power gasoline motors, which will permit running this vessel at three different rates of speed, with motors working at their full efficiency, something not feasible with either a single or twin screw outfit. With all three motors running the vessel will have a speed of 12.0 knots, or 13.8 statute miles; with the two wing screws the speed will be 10.5 knots, or 12.1 statute miles; and with central screw alone 8.4 knots, or 9.7 statute miles. The fuel consumption per mile will be 2.7 gallons under full power, 2.1 gallons under two-thirds power, and 1.3 gallon under one-third power.

A Twenty-Foot Hydroplane.

A Design by John A. Connolly, Jr., for a Hudson River Yachtsman.

WE reproduce herewith Outboard Profile of a 20'x5' Hydroplane from the board of John A. Connolly, Jr., of Sheepshead Bay, New York, which is for Mr. Harvey S. Ford of New York City and Grand View-on-Hudson, Rockland County, New York and is to be built by Mr. Julius Peterson of Nyack, New York.

This hydroplane was gotten up for a fast all-around boat with motor installed forward of amidships, the hull being decked over to ten feet aft of stem and the cockpit being long enough to accommodate six persons. Mr. Ford intends placing his motor aft of amidships and running shaft forward to a differential gear and then aft under the motor to propeller, as it is Mr. Ford's desire to get as high a speed as possible and with this end in view will install a 90-horsepower, six-cylinder Van Blerck motor weighing about 1,000 pounds. This boat will be raced next season as a displacement planer as Mr. Ford wishes to get the best rating possible under the rules and therefore will try her out without the step, she being a single-step hydroplane.

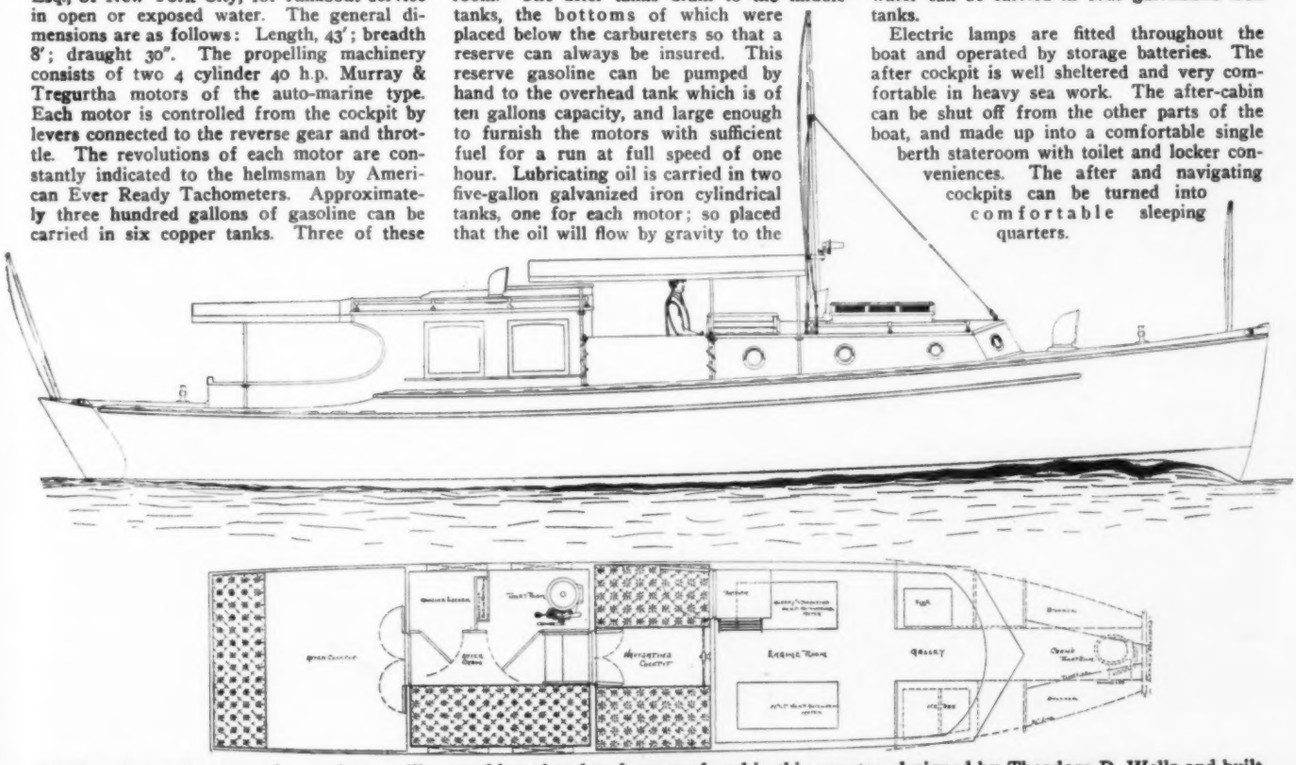


The boat will first be tried out before the step is added to the hull.

A Forty-Three Foot Day Cruiser.

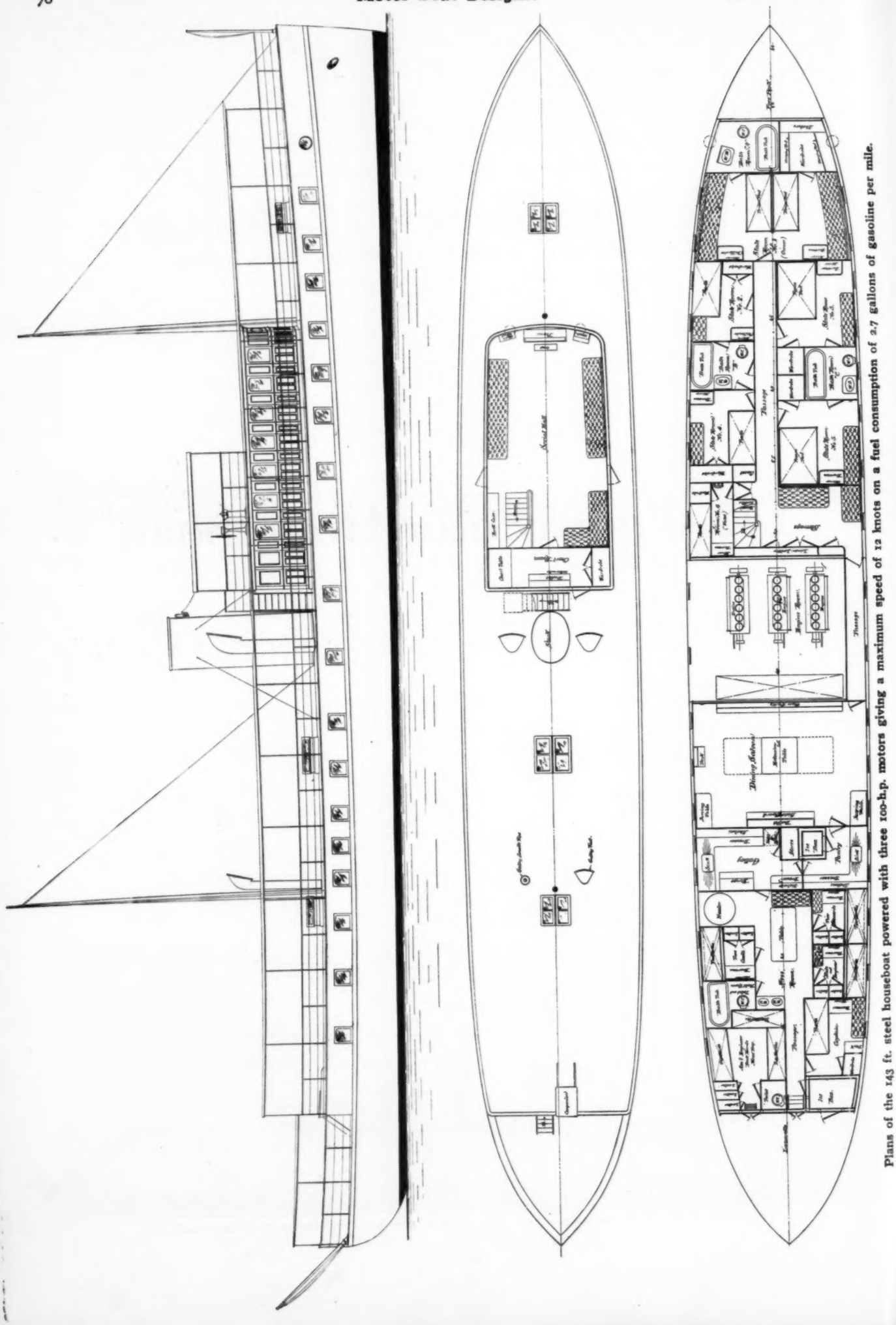
THE twin screw motorboat Greyhound was designed by Theodore D. Wells, Naval Architect, for William H. Dane, Esq., of New York City, for runabout service in open or exposed water. The general dimensions are as follows: Length, 43'; breadth 8'; draught 30". The propelling machinery consists of two 4 cylinder 40 h.p. Murray & Tregurtha motors of the auto-marine type. Each motor is controlled from the cockpit by levers connected to the reverse gear and throttle. The revolutions of each motor are constantly indicated to the helmsman by American Ever Ready Tachometers. Approximately three hundred gallons of gasoline can be carried in six copper tanks. Three of these tanks were placed under the deck of the navigating cockpit, two under the seat in the after cockpit, and the sixth in the upper engine room. The after tanks drain to the middle tanks, the bottoms of which were placed below the carbureters so that a reserve can always be insured. This reserve gasoline can be pumped by hand to the overhead tank which is of ten gallons capacity, and large enough to furnish the motors with sufficient fuel for a run at full speed of one hour. Lubricating oil is carried in two five-gallon galvanized iron cylindrical tanks, one for each motor; so placed that the oil will flow by gravity to the force-feed oilers. The kerosene for the running lights and alcohol for the stove are carried in similar tanks. Sixty gallons of water can be carried in four galvanized iron tanks.

Electric lamps are fitted throughout the boat and operated by storage batteries. The after cockpit is well sheltered and very comfortable in heavy sea work. The after-cabin can be shut off from the other parts of the boat, and made up into a comfortable single berth stateroom with toilet and locker conveniences. The after and navigating cockpits can be turned into comfortable sleeping quarters.



Greyhound, a twin-screw day cruiser, unlike anything that has been produced in this country, designed by Theodore D. Wells and built by J. S. Ellis & Sons.

Plans of the 143 ft. steel houseboat powered with three 100-h.p. motors giving a maximum speed of 12 knots on a fuel consumption of 2.7 gallons of gasoline per mile.



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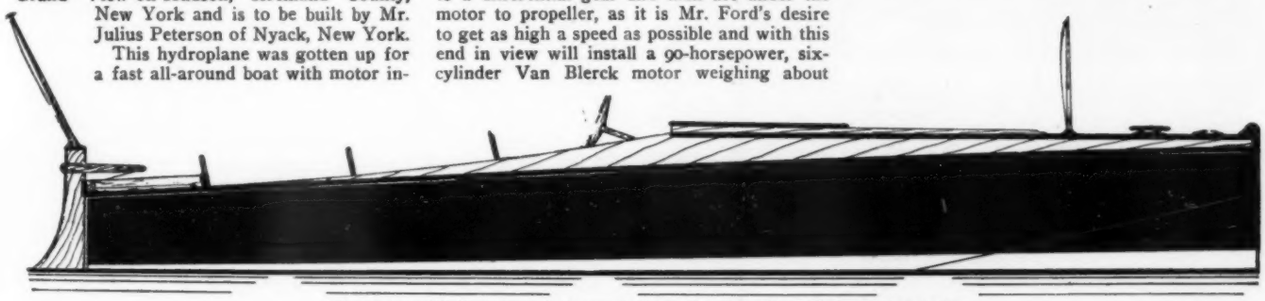

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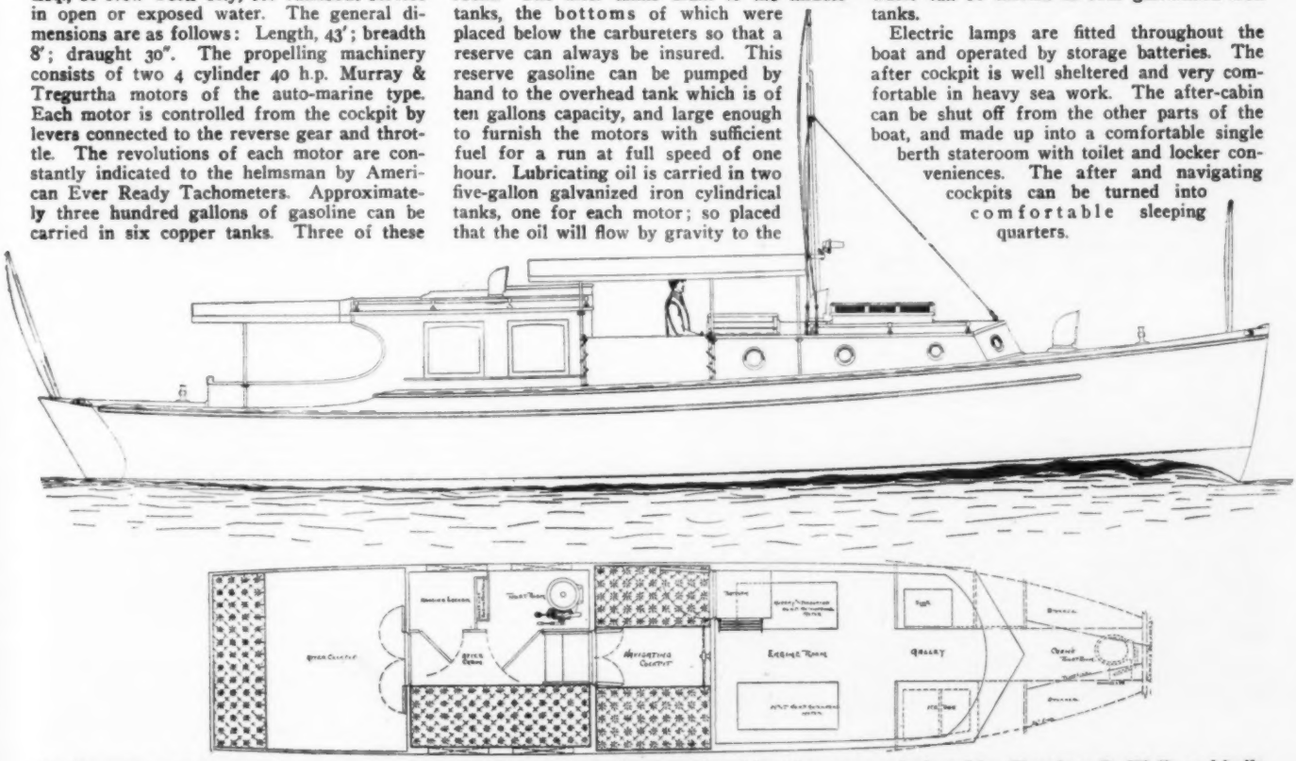

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Motor Boats of Stock Design

What the Lines of the Various Makers of Stock Boats Comprise with Illustrations of Characteristic Models.

Elco's new design of 35-ft. stock cruiser.

The Ginman Company's runabout.

W. H. Jerolamon's Seabright dory.

35-mile Elcoplane.

Speedway runabout.

Elco Motor Boats.

The Electric Launch Company of Bayonne, N. J., have a very complete line of high grade motor boats which range from a 16-ft. hydroplane to a 54-ft. motor yacht. The hydroplane is of the well-known Bug type and is manufactured in both 16 and 20-ft. lengths. The 16-ft. boat equipped with the four-cylinder 40-50 h.p. engine has a guaranteed speed of 30 miles an hour and the 20 ft. boat with a six-cylinder 60-70 h.p. motor is guaranteed for 35 miles. They also make a 28 ft. and a 35-ft. type of open boat which they call the Elco Express. The 28-ft. boat is equipped with 40 h.p. and has a guarantee of 20 miles. The 35-ft. boat has a 60 h.p. six-cylinder machine and a speed of 24 miles. Both of these boats have complete auto control and are finished in the best possible manner. There are two cross seats in the cockpit, the remainder of the space being open for chairs. The 36-ft. cruiser which they build as a stock model is of the combination raised deck and trunk cabin type with a bridge deck between the two cabins. The portion under the raised deck is taken up by the galley and also by the space for the crew. The engine is under the bridge deck and the after cabin contains one double and two single berths, also a lavatory and toilet room. This boat is equipped with a 40 h.p. Elco engine and has a speed of 12 miles per hour. The controls are all mounted at the steering wheel which permits a one-man control. The boat is complete with all deck fittings, sailing lights, life preservers, anchors, cables, flags and cushions and carpet for the cabin. The boat known as the Elco DeLuxe is of much the same style as the 36-footer except that it is 54 ft. in length and is equipped with a 60 h.p. six-cylinder motor which drives the boat at 15 miles per hour. The engine and crew quarters are forward under the raised deck portion. The trunk cabin contains two berths, toilet and galley accommodations. There is a large after cockpit left open for chairs with the exception of a lazy-back seat.

Ginman Launches.

The Ginman Boat Company of Muskegon, Mich., manufacture two styles of auto boats. The smallest is an 18½ ft. x 4 ft. 10 in. boat which is sold without the motor for $175. The 25 ft.-boat on which they specialize has a beam of 5 ft. 4 in. and draws only 1 ft. 8 in. This boat, which is sold without the motor for $360, has a cockpit 12 ft. long which is left open except for two cross seats at the ends of the cockpit. The frames and the keel are made of white oak and the boats are planked with ⅝ in. cypress with oak top strake. The interior trim is of oak or cypress. The fittings include flagpole sockets, chocks, cleats and steering wheel, all of polished brass. The hulls are painted white with green underbodies and the trim is covered with two coats of spar varnish. The company also make row boats in both the skiff and round bottom types. The row boats sell for from $35 to $60.

A Seabright Dory.

Willard H. Jerolamon, of Galilee, N. J., is specializing on a 20 ft. x 5 ft. 8 in. Seabright dory, which is copper fastened and brass screwed throughout. The planking is of ⅝ in. cedar in long lengths and the framing is of white oak throughout. The boat is finished with three coats of paint and is sold complete with a 5 h.p. Hartford motor for $310. Mr. Jerolamon also builds a 35 ft. x 5 ft. 6 in. launch, which is equipped with a 15 h.p. Buffalo motor, which drives the boat at a speed of 13 miles an hour. The hull is planked with ¾ in. cedar, copper fastened to white oak timbers 1¼ in. square. The deck and trimmings are mahogany and all fittings are polished brass. This boat sells for $1,300.

A. D. Cuthbert's Line.

A. D. Cuthbert & Co., of Chicago, Ill., have for the past eighteen months been developing a line of boats of both the motor and rowing types. They report that during the last season their business has been four times what it was the season before, and they look forward to next season as another record breaker. They have a catalogue with photos and descriptions of the various types and sizes, which will be ready for distribution about the first of the year.

Speedway Motor Boats.

The Gas Engine & Power Company & Chas. L. Seabury & Company, Cons., of Morris Heights, N. Y., manufacture two types of stock boats. The first type is known as the Class B launches and this class contains boats 20, 25 and 30 ft. long. The boats are equipped with engines of from 5 to 10 h.p. and sell for from $750 to $1,250. The speeds run from 7½ to 10 miles per hour. The boats are of the regular open family launch type with the engine aft and are sold complete ready for the water. They make auto runabouts of the same sizes as their open launches but with the engine installed forward under a hood and all controls led to a steersman's chair just aft of the engine bulkhead. Except for a lazy back seat at the after end, the cockpit is left open. These boats have speeds of from 10 to 15 miles per hour and are sold complete in all essentials. The company also makes a line of motor yacht tenders of lap strake construction in both 21 and 25-ft. lengths. These boats are of the auto type with the engines under a hood and all controls led to a bulkhead. The cockpit is taken up with a horseshoe seat. These boats run from 14 to 16 miles per hour and are equipped with a 4 in. x 4½ in. Speedway motor. They weigh complete from 1,400 to 1,800 pounds and sell for from $2,500 to $2,750.

Viper Boats.

The Viper Co., Ltd., of Pictou, Nova Scotia, are the manufacturers of two types of speed boats known as the Viper Third and Viper Fourth types. The Viper Third type is what is known as the low power Viper and is a very handy and speedy little boat when equipped with low power. The hull is of the semi-monoplane type. The Viper Fourth type is of original construction and is fully patented by the company. This boat is of the V-bottom type forward with the engine installed in under a hood amidships. All resemblance to the usual type of boat ceases here. Instead of the engine being set at a rake with the propeller shaft leading out through the bottom of the boat, this engine is set level and connected through a transmission gear to two propeller shafts, which run along the bottom of the boat inside and out through the stern on the water line. A large size propeller is connected to each shaft so that the blades are half in the water and half out. The shafts turn in opposite directions, and in this way give the same efficiency as if there was one propeller entirely submerged instead of the two wheels partly submerged. The rudder is also in two parts and is fitted close up against the sides of the boat one plate on each side of the boat. These rudders are operated by a positive gear without any chains or steering line, and they do not increase the draft or effect her weedless qualities in the least. The company claims so many advantages for this type of boat that it is impossible to enumerate them here, but they will send further information upon request.

A 22-Foot Hurd Cruiser.

An extremely low priced raised deck cruising boat is manufactured by A. W. Hurd, of West Lynn, Mass. These boats are 22 feet in length and have a width of 6 feet. The framework is of white oak and the planking of white cedar securely fastened to the timbers. The cabin and cock-pit finishing is in oak and cypress finished bright. The motor outfit is 4 9/16 x 5 in. single cylinder Barker motor, with make-and-break ignition. The entire boat is sold complete, ready to run, for $425.

Miller Auto Boats.

The Miller Boat Company, of Michigan City, Ind., has recently been organized and will specialize upon a 25 ft. automobile boat. This boat has a beam of 5 ft. 2 in. and draws 19 inches under the propeller. It has a straight sheer with a plumb stem and a bent bottom stern. The motor, a 4-cylinder, 4-cycle machine fitted with a dual type magneto and reverse gear and rear starter, is placed under the forward deck with the controls led to the bulkhead. The construction throughout is of the highest class and all fastenings are of either copper or brass. A 15-gallon fuel tank is located under the operator's seat and connected to the carbureter with copper tubing. The boat is finished on deck and in the cockpit with mahogany and sells complete, including cushions, linoleum on the floor, flags and mooring lines, for $685.

Miller runabout.

Niagara Boats.

The Niagara Motor Boat Company, North Tonawanda, N. Y., handle a complete line of complete motor boats and also will supply boats in any stage of construction. The line includes open boats, runabouts and cruisers. They also have a large shop where they build boats of the larger sizes, including motor yachts up to 80 ft. in length. One of their leaders is the 24 ft. x 4 ft. 10 in. auto launch capable of being driven anywhere from 9 to 15 miles per hour with an 8-20 h.p. engine. This boat is known as model No. 244 and has a plumb stem and a V-transom stern. The engine is installed forward under a low raised deck and all controls are led aft to the bulkhead. This boat has a seating capacity of seven persons. The same type of boat is manufactured in 28 ft. length with the same beam as the smaller boat and is capble of being driven at 21 miles per hour with a 30 h.p. engine. A still larger boat of the same model is 32 ft. long x 4 ft. 6 in. wide and can be driven by an 80 h.p. engine as fast as 30 miles per hour. They have a 25 ft. raised deck cruising boat that follows the modern trend in design. This boat can be equipped with engines of from 6 to 12 h.p. and can be driven up to 10 miles per hour. The headroom in the cabin is 4 ft. 10 in. and the cabin is 9 ft. 3 in. long. This gives good accommodation for two men on a cruise. A 31-footer of the same model contains ample space for three men to cruise any distance. The company also manufacture rowboats and yacht tenders from 9 to 14 ft. in length.

Niagara cruiser built from k.-d. pieces.

The Patterson Hydroplane.

The Patterson Boat Works, of Point Pleasant, Ken., are marketing a 17 ft. x 3 ft. 9 in. hydroplane that is equipped with a three-cylinder 21 h.p. Gray motor. The boat is planked with ⅜ inch selected mahogany and the framing is of white oak with brass and copper fastening. The decking is of 5/16 inch mahogany and blind fastened. The coaming, mouldings, seats and all interior joiner work is of mahogany. The completed hull is finished with two coats of filler, one coat of mahogany stain and five coats of Valspar varnish. Each coat of varnish is rubbed with pumice stone and the last coat is polished to a piano finish. The fittings throughout are of polished brass and include a ventilator and flagpole sockets. The gasolene tank which is mounted on the after deck has a capacity of ten gallons and is of polished copper. The levers are all led to a 17-inch automobile wheel, giving perfect one-man control. The floor of the cockpit is covered with linoleum and the seats are upholstered with leather. There is a fire extinguisher, life preservers, brass whistle, and combination oil and electric lights furnished. The boats have a guaranteed speed of 27 miles per hour with two passengers. The price complete is $750.

Niagara k.-d. runabout.

The Elite Runabouts.

The H. B. Pickering Company, of Ann Arbor, Mich., are putting out a line of runabouts from 24 to 43 in length, and also what they call a Water Cab, which is a 28 ft. runabout, with a light glass cabin aft. The boat gives one the impression of having both speed and comfort. There is a driver's cockpit forward of the cabin where all controls are located. This cockpit is protected by storm curtains and a plate glass wind shield. The regular motor for this boat is a 30-45 h.p. Sterling of 4 cylinders. There is an option of a Loew Victor 40 h.p. motor.

The smallest runabout, which is known as the Elite-24, is 24 ft. 6 in. over all and has a beam of 4 ft. 6 in. The motors are either Loew Victor or Sterling machines, which drive the boat at 20 miles per hour. There is a seating capacity for from six to eight people.

The next size of boat is known as the Elite-32 and is 31 ft. 10 in. over all, with a breadth of 5 ft. 2 in. The boat is practically the same as the smaller hull except that it is powered with a 45-65 h.p. Sterling and has a speed of 25 miles an hour. The seating capacity is also larger. The largest boat they build is the Elite-40, which has a speed of from 28 to 30 miles per hour and is driven by an 8-cylinder Sterling racing engine. There is seating room for ten to fifteen people.

The construction of all these boats is of the highest grade. The planking is selected white cedar and the framing is of white oak with copper and brass fastenings. The decks are of mahogany laid in narrow strips. The interiors are finished in the best grade of mahogany. The controls are of the automobile type with foot pedals operating the clutch. Air tanks are fitted so as to float the boat in case of accident and the gasoline tank drains outboard. The boats are fitted with electric self-starters and electric lights.

Patterson hydroplane.

The Red Wing Twenty.

The Red Wing Motor Company, of Red Wing, Minn., make a specialty of a 20 x 4 ft. 6 in. runabout equipped with a 2-cylinder, 16-20 h.p. motor of their own make. The framing of the boat is of white oak and the planking of white cedar with brass screw fastenings. The decking and other finish is of white oak and cedar stained to resemble mahogany. The control is entirely of the automobile type with rear starter. The gasoline tank is of galvanized iron, with a capacity of twenty-five gallons. These boats have a guaranteed speed of twenty miles per hour. They also make a line of 16, 18 and 20 foot open launches with Veed transom sterns. These boats are equipped with 3 or 4 h.p. motors and have speeds of from 7 to 8½ miles per hour. The boats are planked with cypress, with galvanized fastenings to white oak frames. The decking and other finishing is of white oak, varnished. The gasoline tank is located in the bow and has a capacity of ten gallons.

H. B. Pickering Company's stock runabout.

Weckler-Fauber Hydroplane.

The Weckler Boat Co., of Chicago, Ill., are builders of Fauber hydroplanes in addition to a line of regular launches. These planes are of the genuine Fauber type and are made under special license. Their leading hydroplane is a 26 foot boat finished throughout with mahogany and having a seating capacity for five people. These boats are powered with 6 cylinder 4 cycle 100 h.p. Van Blerck motors with an air starting device and the boats have a guaranteed speed of 35 miles per hour. This boat is sold for $4,200 complete. Full information regarding this and other boats made by the Weckler Company will be sent upon request.

The able Red Wing open boat.

The Summer Girl Models.

The Western Launch & Engine Works, of Michigan City, Ind., are the manufacturers of two types of open launches that have attracted considerable attention during the past season. The smaller of the two boats has a length of 20 feet, a beam of 4 feet 6 inches, and is trimmed with mahogany with copper fastenings and a copper fuel tank. This boat equipped with a single cylinder two cycle motor of 4 h.p., sells for $267 complete. The same boat equipped with a two cylinder 2 cycle 6 to 8 h.p. motor, with a reverse gear and full automobile controls and a guaranteed speed of 12 miles per hour, costs $323. The larger type of boat is 25 feet long and has a beam of 5 feet 2 inches. The specifications are the same as the smaller boat, with the exception of the engine, which is of the 4 cylinder 4 cycle type installed under a hood with full automobile control. This boat sells for $490.

Red Wing runabout.

White Canoes.

E. M. White & Co., of Old Town, Maine, are the manufacturers of a complete line of canoes. These boats are made for sails, paddles or motors, but the specialty for motor boatmen is a motor canoe decked forward and aft with a good sized coaming around the cockpit. This boat is equipped with air chambers so that it is non-capsizable and unsinkable. These boats are of very speedy type and for use in lakes and rivers where there are no extraordinarily high seas, they are very satisfactory. They are made in various lengths with several different power plants and are sold at a low price.

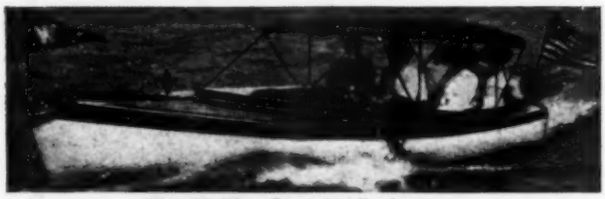
35-ft. Elco express.

Tiny Tad II, a Reliance hydroplane.

Cleveland Auto Boat Company's speed model.

Muirmaid, a Doyle hydroplane.

Peter Pan Sr., a Reliance day cruiser.



The Mullins Steel family boat.

The Keller Seabright dory.

Milwaukee Yacht & Boat Company speed boat.

The Peter Pans.

The Reliance Motor Boat Company of New York, manufacture five different types of stock boats. They are, with one exception, of the runabout type. Their smallest boat, which is a 21 footer, is known as the Reliance Special and is equipped with a 4-cylinder 24 h.p. Continental motor with high tension ignition. These boats are finished in mahogany, with polished brass deck fittings. The boat is equipped with a rear starter and has electric sailing lights. They make a 28 foot model which is a duplicate of the well known Peter Pan IV. This boat is equipped with a 40-50 h.p. Continental motor and has a speed of 27 miles. Their largest boat, which is a 40 x 7 ft. 9 in. day cruiser, is a duplicate of Peter Pan Sr. and has a guaranteed speed of 20 miles per hour with two 50 h.p. Continentals driving twin screws.

Cleveland Auto Boats.

The Cleveland Auto Boat Manufacturing Company, of Cleveland, Ohio, are the manufacturers of a line of open and cabin boats known as Auto Craft. These boats are made in sizes from 18 feet up to 32 feet in length. The 18 foot Auto Craft Special has a length of 18 ft. and a beam of 4 ft. 6 in. The boat is of the family launch type, with the engine installed amidships under a thwartship seat. The motor is a 3 h.p. Ferro engine, with a special Auto Craft under water exhaust. The boat is planked with ½ inch southern cypress, put on a white oak frame with the hollow and round system of planking. The seating capacity of this boat is eight people and she has a speed of 8 miles per hour. The trim is of varnished oak, and the fittings are polished brass. The price of this boat ready for the water is $200.

Morris Canoe Launch.

This launch is 20 x 3 ft. and is made by D. M. Morris, of Veazie, Me. The boat is of the transom stern type, decks forward and aft, and with a short coaming around the forward end of the cockpit. This boat is built on the same construction as the well known Morris canoes, being canvas covered over cedar planking with mahogany finish. The boats have a slat flooring and two athwartship seats. These boats can be equipped with engines of 3, 5, 6, or 7 h.p. in 1, 2, and 3 cylinder types and have speeds from 9 to 14 miles per hour. These boats sell for from $210 to $300 and are very suitable for river and small lake use, where no extremely heavy seas are met with.

Faultless Frames and Hulls.

Valley Boat and Engine Company, of Saginaw, Mich., are the manufacturers of a line of boat frames and parts which include hulls of every type. While this company will build any type of boat to special order, their chief business is in knock-down boat frames. They furnish the frames in three stages of completion. The first is the sawed out material for the frame, without being dressed further. The second is the partly completed frame ready to be finished by the amateur. The third stage is the completed frame shipped either erected ready for the planking or in knockdown condition, but with all holes for fastening bored. The prices on these frames always include full size patterns for all the parts that are not furnished together with full directions.

Monitor K-D Frames.

The Monitor Boat & Engine Company, of Newark, N. J., builders of fully fitted knockdown boat frames, report a very successful season during the past year. Monitor frames are set up in the factory before being sent out and all holes are bored, and all timbers fitted into place, and all parts plainly marked so that erection of the frame when it reaches the customer is a matter that can be easily done by any amateur. The company make an exceptionally complete line of these frames, including open family launches, runabouts, extremely high speed boats and hydroplanes, and all types of raised deck, trunk cabin, and bridge deck cruisers. An exceptionally complete catalogue fully describing the various boats and the method of construction will be sent upon request.

Doyle V-Bottom Boats.

The M. I. Doyle Company, of New York City, manufacture a line of all kinds of motor boats to order, but make a specialty of "V" bottom semi-hydroplanes. These they call their "Express" models. The boats are 22 ft. 6 in. long and have a beam of 5 ft. 1½ ins. A 20 h.p. two-cycle Robers motor provides the motor power and serves to drive the boat at a speed of better than 18 miles per hour. This boat is completely equipped with a Kenyon automobile top, a reverse gear, and a rear starter, and has full automobile controls with spark and throttle levers brought to the steering wheel. This boat sells complete, as described, for $900. There are five other models manufactured by this company selling for from $225 upward.

Robertson Motor Canoes.

J. R. Robertson, of Auburndale, Mass., is a manufacturer of canoes and canoe launches. These boats are of high class construction and are built in all regular sizes. There are several different types, so that almost any pocket-book or any idea can be satisfied. The motor canoes are made to order only, so that your own ideas can be incorporated in the manufacture. Mr. Robertson does not handle a particular make of engines and consequently will install any make. A very complete catalogue with prices of all the different models will be sent free upon request.

Gile Leader Launches.

The Gile Boat & Engine Company, of Ludington, Mich., are the manufacturers of a very complete line of open motor boats and also marine engines. The company manufacture two styles of launches which are known as the "Leader" and the "Ideal" models. The "Leader" boat is built in two sizes, a 16 foot boat equipped with a 2½ h.p. motor, and an 18 foot boat equipped with 2½, 4 or 5 h.p. The 16 foot boat is sold complete at the very low price of $114. The "Ideal" launches are made in 22½ feet lengths with 5 foot beam and are equipped with an 8 h.p. Gile engine installed under a hood with full automobile control. This boat has a speed of 12 miles per hour. The price is $500.

Mullins Steel Launches.

The W. H. Mullins Company, of Salem, Ohio, are the manufacturers of a very complete line of steel launches. These boats have been on the market for many years and the Mullins Company state that they are the largest builders of boats in the world. Their motor boats are made in 3 different models known as the "Special," the "Leader" and the "Autoboat" types. The special launches are good staunch little boats of the entirely open type, there only being a very short deck at the ends. The "Leader" launches are the regulation family type, with side and end decks and a varnished coaming. These boats are all of bright finish inside and are equipped with Ferro engines. The "Auto" launches have either Ferro or Loew-Victor machines installed under a hood with full bulkhead controls of the automobile type. These boats are all made of pressed steel, and the company claim that they will never leak or rot out.

Keller's Seabright Dory.

Henry E. Keller, of Long Branch, N. J., is the maker of a 20 foot Seabright open dory equipped with either Kennebec, Fulton or Bridgeport motors of the heavy duty type. This boat is particularly intended for use in open waters where there is more or less heavy sea, and they are built so that they can be run ashore through the surf and hauled up on the beach. The boat has a beam of 5 feet 6 inches and is copper fastened throughout with ¾ inch cedar planking and a white oak frame. The planking is put on with the lap strake method without any caulking. The price of this boat complete is $285.

Milwaukee Boats.

Milwaukee Yacht & Boat Company, of Milwaukee, Wis., have reason to be proud of the line of runabouts they built during the last season. Among these were Kingfisher, a 30 mile 40 footer equipped with 150 h.p. Sterling motor; Wardell C, a 33 foot boat equipped with a 90 h.p. Van Blerck engine; and Quaker Girl, a similar 33 footer. The firm have also developed a line of stock boats in 21, 25, 26, and 33 foot sizes. The 21 footer has a speed of 13 miles an hour and is equipped with a 12 h.p. 4 cylinder 4 cycle motor. The 25 foot boat has the same power plant as the 21 footer. The 26 foot runabout has a beam of 5 feet and a speed of 18 miles per hour with her 25 h.p. Buffalo engine. The firm also make a 20 foot hydro runabout, which runs at 17 miles an hour with a 15 h.p. machine and a 13 foot yacht tender equipped with a 2 h.p. Kahlenberg motor.

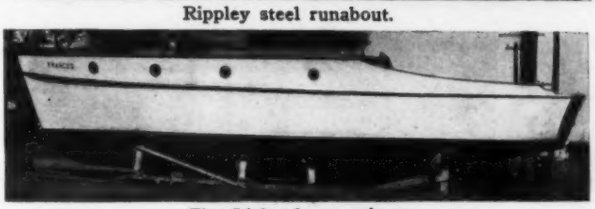
A Line of Steel Boats.

The Rippley Steel Boat Company, of Grafton, Ill., manufacture a complete line of motor boats of all types and also yacht tenders of both the rowing and motor types. They make a specialty of tunnel stern boats for shallow water service and have shipped many of these boats to foreign countries. They also build stern wheel hulls. They will build the boat complete or will ship you the necessary material already stamped and punched so that you may put the hull together yourself. All parts of Rippley boats are of steel and there is no wood entering the construction at all.

Rippley steel runabout.

Richardson Motor Boats.

G. R. Richardson, of North Tonawanda, N. Y., manufactures three separate types of motor boats. The first type contains boats of the runabout model from 18 ft. to 30 ft. in length. Boats of the family type are manufactured in seven different models, from 20 ft to 30 ft. long. Cruising boats are manufactured in seven models, from 25 ft to 35 ft. long. All these boats are built complete or may be obtained in any stage of construction from the K. D. frame to the completed hull ready for the engine. He also manufactures yacht tenders from 10 ft. up.



The Richardson cruiser.

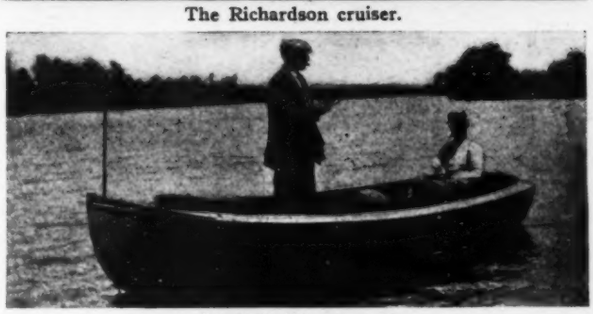
Two Low-Priced Auto Boats.

The Brein Marine Works, Rock Island, Ill., are the manufacturers of auto boats in two sizes. The 18-footer, known as the Firefly, is a modern strongly built boat with the engine forward, under a hood, which is fitted with a lock and key, so that the engine and fittings, including the gasoline tank, can be protected at night. The control is by horizontal auto wheel, and the spark and throttle levers are mounted on the bulkhead. This boat is also made without the hood, bulkhead and auto control. The cockpit on either type is entirely open, with the exception of a cross seat for the helmsman and another wide seat with a lazy back at the after end of the cockpit. The seats are upholstered in either waterproof duck or artificial leather.

A 20-footer of much the same type is also built and equipped with either 4 or 8 h.p. engine. This model is known as the Nautilus, and has a speed of from 8 to 9 miles an hour with the 4 h.p. engine, and from 11 to 12 miles with the 8 h.p. engine. These boats are sold at from $158 to $238 complete.

Cape Cod Stock Whaleboats.

The Cape Cod Power Dory Company, of Wareham, Mass., have a line of both dories and whaleboats which they keep in stock for immediate shipment. One of their leaders is a 28 ft. by 7 ft. cabin whaleboat which is specially designed for use in rough water. These boats have been tried out all through the winter months in the open sea, under the most trying conditions possible. The cabin is built to accommodate two men with all the equipment needed for extended cruises.



Cape Cod dory.

The Davis Dinks.

A complete line of both rowing and motor tenders is handled by the Davis Boat Works Company, of Sandusky, Ohio. They make rowing tenders from 8 ft. in length up to 14 ft., all of which have a beam of 50 in., except the 8 ft. boat, which has 42 in. beam. These boats sell at from $60 to $100. The regular stock power tenders are made in both 12 and 14 ft. sizes and are sold without the motor but with engine bed and all other equipment. The price of the 12-ft. boat is from $100 to $118, and the 14-footer sells for from $110 to $130. They also make a special power tender in 14 and 16-ft. lengths. This boat is decked forward and aft and fitted with a coaming. There are side seats and the bulkhead aft of the motor. These boats sell at from $165 to $205 without the motor. They are all bright finished with either oak or mahogany trim.

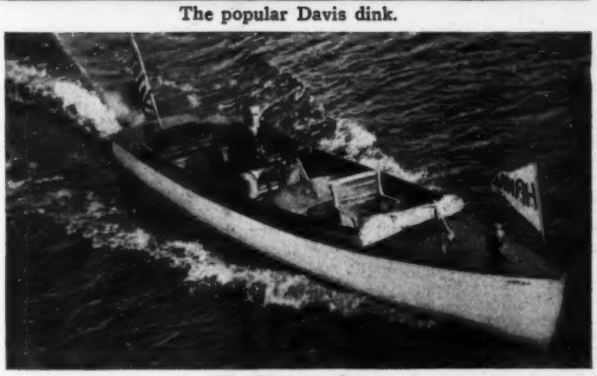
The popular Davis dink.

Defoe K-D Boats.

The Defoe General Manufacturing Company are the manufacturers of boats in all stages of construction, but make a specialty of completely knocked down boats. Their line includes canoes, duckboats, rowboats, sailboats and launches of every type. One of their specialties is an 18 foot open launch with a 3 h.p. motor and a speed of from 8½ to 9 miles per hour. This boat is sold complete for $130 or will be sold in any stage of construction. The instruction sheets which they furnish with their full size paper patterns, are exceptionally clear and are written so that an amateur builder can easily understand them. Their knockdown frames are all completely set up at the factory before being shipped, and are then taken down, fastened in shape with stay laths and shipped in a crate. This prevents the various parts getting out of shape during shipment and also assures the purchaser that the frame is in condition to be set up when he receives it.

Rice Auto Launches.

Rice Brothers & Co., of East Boothbay, Maine, are specializing on a 20-foot auto boat equipped with a two-cylinder two-cycle motor of 8-10 h.p. The control is of the automobile type, as the motor is located forward of a bulkhead and under a flush hatch. This boat has a speed of 13 miles per hour and sells for $475. They also make this boat without the auto control, but with the motor located in the center of the cockpit. This boat sells for $375. This latter type of boat is also made in a 17 foot model, selling for $195. The company also make a 9 foot yacht tender.



The Rice runabout.

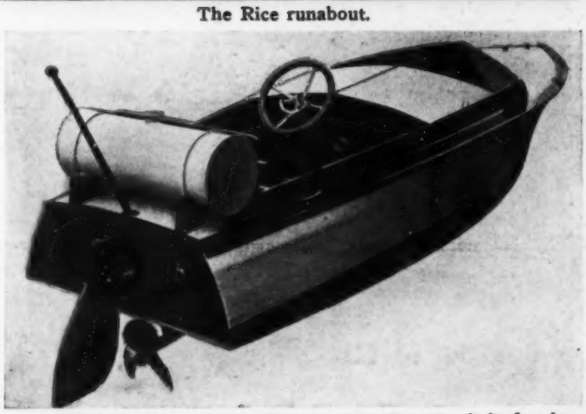
The Hankscraft.

The Hankscraft Company, of De Pere, Wis., have long marketed one type of launch 30 ft. 6 in. long and 6 ft. 6 in. in breadth. This boat is equipped with a 25 h.p. 4-cylinder 4-cycle motor mounted on a special bed, which permits the motor being disconnected and tilted up so that adjustment in the crank case can be easily made. The hull is framed in white oak with closely spaced timbers and the planking is of clear white cedar copper fastened. The decks are of bright finished quartered oak, with the motor installed under a folding hatch. The hull is painted with five coats of white lead above the waterline and two coats of non-fouling paint over two priming coats on the bottom. The remainder of the boat is finished with five coats of spar varnish rubbed to a smooth finish. The boat has a seating capacity for twelve people and a speed of 12 miles per hour. The control is of a special type steering wheel which, when pressed forward, automatically connects with the motor and can be used for turning the motor over for starting. As soon as the motor starts the wheel is disconnected and snaps back for use as a steering wheel. The spark and throttle controls are in the center of the wheel. Air tanks are provided forward and aft so as to float the boat in case of damage and the entire equipment of the boat and engine is exceptionally complete. The price is $2,500.

Complete Line of Bath Marine Construction Co.

The Bath Marine Construction Company, of Bath, Me., manufacture a line of stock V-bottom boats, including hydroplanes, cruisers, runabouts and the ordinary type of open launch. They also have yacht tenders. These boats may be had all complete and equipped with reliable engines, or can be purchased without the engines, but all completed as far as hull work. If the buyer wishes to build the boat himself he can buy paper patterns the full size of every part and cut his own lumber from the pattern, or he can purchase the boat in knockdown form and only do the erecting himself. These boats also come with the keel and frames in knockdown form, so that the planking and finishing can be done by the amateur.

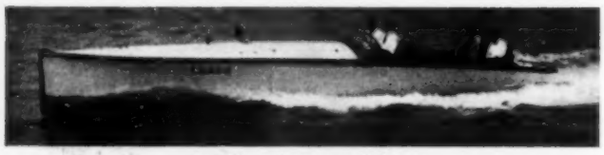
They make a specialty of a 25 ft. hydroplane equipped with a 70 h.p. engine, which sells for $2,000. These boats have been used very successfully in races in various parts of the country. This boat, of course, can be purchased in knockdown form. Another one of their leaders is the 13 ft. hydroplane known as the Bumble Bee, which has a speed of 15 miles per hour with a 6 h.p. double-cylinder motor. The price of this boat complete is $325. Without the engine the hull sells for $183, and the boat can be had in knockdown form for $64. The knockdown frame only costs $27.



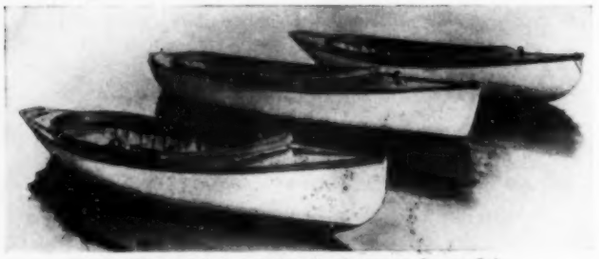
Bumble Bee, the Bath Marine Construction Company's hydroplane.

Knox yawl dory.

Robertson stock model.



A Milwaukee speed boat.



Three of the Atlantic Company's models.

Luders 36-ft. stock cruiser.

The Racine cruiser.

The Brein Marine Works moderate-priced runabout.

Dale Stock Boats.

William L. Dale, of the Bronx, New York City, is the manufacturer of boats of all sizes, but specializes on a 12-foot dinghy skiff, which he sells complete for $16. This boat weighs 125 pounds complete. The building material of this boat can also be obtained with all the parts cut to shape and machined, and a complete set of moulds, plans, and full directions for erecting and fastening together. This K-D boat sells for $9. Mr. Dale also manufactures the Dale 30, which is a 30 foot raised deck cruiser, with an 18 foot cabin and a cockpit 8 x 10 ft. This boat complete with toilet, lockers, icebox, clothes and dish closets, with running water piped to sink and lavatory, and all woodwork paneled sells with a 12 h.p. engine for $1,100 or without the engine for $700.

Brooks Line of Stock Boats.

The Brooks Mfg. Company, of Saginaw, Mich., have increased their line of knockdown boats for next season, so that they now have a complete line of all classes of motor craft. They will sell you a boat complete, all ready for the water, or will sell the same hull in a knockdown form that can be easily set up by an amateur, according to the directions furnished. The boats are also sold in a knockdown form without the planking and decking. This is sometimes advisable when the planking has to be shipped a long way. They also sell full-sized paper patterns of every part of their boats, so that an amateur can buy his lumber from his local dealer and have every part cut out to fit from the pattern.

One of their most popular boats is known as No. 234, and is a raking transom stern motor boat 23 ft. long, with a beam of 56 in. This boat is designed to be equipped with a motor of from 6 to 12 h.p. and has a seating capacity of 12 persons.

The price of this boat complete in knockdown condition, including the pattern, coaming, moulding, planking, decking and all hardware and fittings, is $73.50. For the knockdown frame and pattern, without the planking and other finishing material, the price is $31. If the buyer wishes to build the entire boat from his own lumber he can purchase the pattern and instructions for $5.

The company has been in business for years, and has always handled the same class of boats, which they have found to interest the largest number of people. Their line also includes row boats, canoes and sail boats, the prices for which range from $15.50 upward. They publish a catalogue which will be mailed upon request, illustrating and describing their full line.

Robertson Brothers Stock Models.

Robertson Brothers, of Hamilton, Can., manufacture two types of stock boats. The semi-speed type is built in 20, 23, and 25 foot lengths with from 3 ft. 9 ins. to 5 ft. 6 ins. beams. These boats sell from $170 to $250 without the engine. The family boats are manufactured in four lengths, ranging from 20 to 25 feet. These models sell for from $170 to $265.

The Knox Yawl Dory.

The constant demand for a strong, seaworthy small boat at a moderate price has led the Camden Anchor Rockland Machine Company, of Camden, Me., to manufacture several types of dory yawls, which range in price from $85 to $540, depending upon the size, power and equipment of the various models. The sea-going qualities of this type of boat is well known, and they are also especially adapted for river and shoal draft work. They are strongly constructed throughout and able to stand the severest weather. They may be purchased in sizes ranging from about 19 ft. to 30 ft. in length, either with or without power.

The Atlantic Dories.

The Atlantic Company, of Amesbury, Mass., well known for their sea-going gurnet dory and semi-speed clipper motor boats, are now building a fast express tender and modified dory cruiser in addition to their regular line. The gurnet dory, aside from being an absolutely safe proposition from a sea-going standpoint, stands for safety both in connection with its gasoline equipment and motor installation. The express tender represents the development of an ideal day cruiser which may be had either as an open boat or with a short raised deck forward. Their 35 ft. fast cruiser gives ample opportunity for a wide cruising range at a speed of about 16 miles an hour, and when equipped with the Atlantic engine makes an absolutely reliable and noiseless plant.

Luders Marine Construction Company's Product.

This company makes a specialty of stock boats and includes in their line practically every type of motor, row or sailing boats. One of the styles that they have had the most success with is a 36 ft. cruiser of the raised deck type with 9 ft. beam, and equipped with a 15 h.p. machine which drives the boat at better than 9 miles per hour. The galley takes up the space the full width of the boat directly aft of the fore peak and is equipped with stove, shelves, and icebox; also a small sink. Aft of the galley there is a good sized saloon with a folding table in the center. Aft of the saloon there is a vestibule and companionway on one side and the toilet room on the other. The engine room is aft of this portion of the boat. Controls are led to the cockpit, which is of the watertight self-bailing type.

The Racine Special.

A 23 foot auto boat is being featured by the Racine Boat Co., of Racine, Wis. The principal dimensions of the boat are length, 23 ft.; breadth, 4 ft. 6 in.; and draft, 1 ft. 10 in. The framing is of white oak with timbers ⅞ in. square spaced on 6 in. centers. The control is of auto type with a rear starter on the bulkhead. The boats are usually equipped with a 12 h.p. engine and are capable of running 12 miles per hour. The complete line of stock boats built by this company includes boats of various types and sizes, ranging from 15 to 70 ft. in length, and in price from $170 to $20,000. There are also a line of rowboats and canoes carried in stock.

Dunphy K-D Frames.

The Dunphy Boat Mfg. Company, of Eau Claire, Wis., are the manufacturers of a representative line of motor boats, canoes, and rowboats. They will build any type or size of boat on special order, but make a specialty of a line of open motor boats, which they keep in stock. These boats are built in sizes from 15½ feet to 24 feet and are of both the family and runabout types. One of the leading products of the Dunphy factory is a line of knock-down frames. Unlike many of the K-D outfits on the market the Dunphy outfits are not merely a lot of timbers bent over one or two molds which must be refitted by the purchaser, but all Dunphy frames are set up in the factory with all timbers bent and beveled. A catalogue will be sent upon request.

Pioneer Boats.

The Pioneer Boat and Pattern Company, of Bay City, Mich., claim to be the largest manufacturers of knock-down motor boats in the country. Their line is very inclusive, including as it does boats of the speed, semi-speed, fast cruiser, and heavy weather models. The cruising boats are built with either raised deck, trunk cabin, or glass cabins, and in practically every size. Two sizes of dories are also carried. For shoal water use there is an exceptionally complete line of tunneled stern boats, in sizes from 19 to 50 feet in length. The firm is now making a specialty of a completed boat of the raised deck type, which they sell complete, including engine, electric light, toilet, and full operating equipment, for $850.

Toppan Dories.

The Toppan Boat Mfg. Company, of Boston, Mass., are well known for their line of power dories and other boats of various sizes. The company will supply these boats completely equipped with their own motor and all ready for the water, or they will supply these boats in any stage of construction, from the K-D frames up. Their boats are specially designed so that they can be easily built by an amateur according to the directions and plans that are furnished with all the boats. Their larger size dories can be equipped with a cabin, if desired, and are very staunch, seaworthy, and economical little boats. Boats of the whale boat type and also of the regular launch type are also made. All these boats are made in lengths from 16 to 30 feet except the line of rowing dories and skiffs, which are made in sizes from 10 to 17 feet in length. Both of these rowboats are sold at a flat rate of $2 per foot.

Accessories for the Motor Boatman

Electrical

AT last manufacturers of motors have realized what an important part the ignition system bears to the successful operation of their products. In the past, while they have given the proper attention to all the refinements required for a smooth running motor, yet often times they have failed to realize that all such things as correct proportioned ports, fine bearings, perfect alignments, well balanced moving parts and the like, while of the utmost importance, still were of little avail without a serviceable and properly designed electrical and ignition plant. Now we see the greatest stress laid on the importance of just these little things that in the past have been the cause of at least 75 per cent. of the troubles in operating marine internal combustion engines.

The old saying that the make and break system is relatively electrically perfect and the jump spark system mechanically perfect, is fast losing its significance. Previously the former system was a cumbersome one with a little attention to kinematic theory so that they refused to operate efficiently just as soon as the speed went up. On the other hand their jump spark cousins were just as wont to lie down to rest when most wanted, that is in a storm when the rain was the wettest or the waves and spray hitting the boat the hardest. It was then that all the fine work that had been spent on the power plant by the builders became of no avail, lacking a serviceable electric plant.

Now we find the manufacturers themselves studying the requirements necessary to make their engines live through all these conditions with the result that the producers of electrical outfits have been called upon to exert all their energy in order to turn out a high grade battery, coil, plug, magneto, switch, wire, lamp, etc., and most astonishing have been the advances. A knowledge of the various requirements was absolutely necessary before this could be accomplished, while in addition, simplicity of every part had to be kept in mind to assure a successful article.

Parallel with this advancement in quality of the products has been the necessary investigation from the cost standpoint, with the result that the prices of the standard electrical equipment are lower than ever before and not at all out of keeping with the rest of the plant.

We have now passed the experimental stage. Reliable and serviceable outfits of either the make and break or jump spark type can be furnished for nearly every make of engine and the range of satisfactory electrical accessories is broad and safe.

Originally the wet battery was used as a source of energy when the development of the motor boat was in its infancy, but as these were impracticable from many standpoints, the dry cell soon superceded them for marine work. The advances made in the storage battery manufacture has firmly fixed these as very desirable and satisfactory for all round use.

The troublesome separate coil and separate vibrator installation has been much improved upon and superceded to considerable extent by the master vibrator and this in turn by the single coil and vibrator used in connection with a distributor.

The next step in advance was the invention of a mechanical means of making and breaking the primary circuit so as not to be depended upon the fickle magnetism in the core. This brought out the well known uni-sparker, of which there are several on the market giving excellent satisfaction.

The self contained coils which are fitted as part of the spark plug, now make the jump spark system as reliable as any in an open boat and the various types of magnetos both high and lown tension, direct and alternating current, are further evidences of the advancement made in the electrical line.

The double and dual systems of firing the charge act very similar to two torches applied to a bon fire at different points, causing a much quicker combustion.

Connecticut Plug Coil.

This device, as the name implies, is a spark coil and spark plug combined and is designed primarily for marine work, although it can be used on any form of jump spark engine. The device is thoroughly well designed and finished and its efficiency is proved by the numbers, which are giving complete satisfaction. A strong point is that its operation is entirely unaffected by water. You cannot get a shock from it, and if necessary new porcelains can be substituted with the same ease as in a spark plug. The price with switch is $5.50; without switch $5. It is manufactured by the Connecticut Telephone and Electric Co., Meriden, Conn.

* * *

Atwater Kent Unit Sparker.

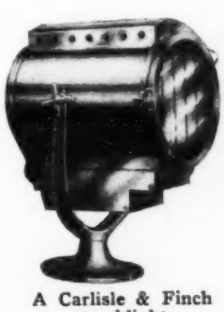
The Atwater Kent Manufacturing Works, Philadelphia, Pa. This device is designed to take the place of a high tension magneto. In operation the device is mounted exactly in the same manner as an ordinary timer. The current is led from the batteries direct to the device from which it is led as a high tension current to the spark plug. The apparatus has few working parts and is entirely enclosed with a waterproof cover so that dampness has no effect. The device is made for use on any number of cylinders.

* * *

Ideal Switches and Plugs.

The Ideal Switch Co., Inc., of Plainville, Conn., manufacture lines of switches which should appeal most strongly to power boat owners and users. The side acting type embodies the Ideal spring contacts in a new form which renders them exceedingly compact, a feature which alone should commend it when space is a big consideration. No. 502 is a front connected quick acting switch with a positive stop, making a clean contact and delivering full current strength to engine. It is claimed that no amount of rocking or jar can throw this switch out of "stop"; prices range from 30 cents to 75 cents. The Ideal mica core spark plug, costing $1.25 each, has a new type of inner insulation and is guaranteed to be puncture, oil, and soot proof.

The Connecticut plug coil.



A Carlisle & Finch searchlight.

A Rajah plug.

An Ideal switch.

Electric Search Lights.

The Carlisle & Finch Company, of Cincinnati, Ohio, handle a very complete line of search light projectors from 7 inches in diameter upwards. The projectors from 7 to 9-inch diameters are intended for motor boats and small yachts. These can be furnished with a bracket for mounting against a bulkhead or with a short base so that they can be mounted directly on deck. A specially high base for use on flush deck boats where the search light must be brought up to the level of the operator's waist is also provided. These projectors either have a handle on the back by which they can be swung or a control rod, so that they can be mounted on top of the pilot house or cabin and operated from below deck. The swinging mechanism on these lights is so simple that it may be operated by one hand. The projectors are all of the arc light type and have a special carbon-feeding mechanism which has both automatic and hand feed, the latter so that the light can be adjusted at will. The smallest of these projectors has a current consumption of from 3 to 5 amperes and the candlepower is from 1000 to 1500 c.p.

* * *

The Self Starter Rajah Plug.

The Rajah Auto Supply Co., of Bloomfield, N. J., are manufacturers of Rajah spark plugs and terminals. The Rajah self-starter plug has a shoulder at the lower end, upon which rests a yoke held by a jam nut, gaskets being used to make an absolutely gas tight connection. The gas enters the cylinder through the yoke, following the channel grooved in the shell to the passage through the shell into the cylinder. The yoke is adjustable and can be moved to the most convenient position for connection. This plug, except for the specially designed shell, is exactly similar to the regular Rajah plug and was originally manufactured for and approved of by the Prest-O-Lite Co.

K-W Special Magneto.

This magneto is manufactured by the K-W Ignition Company, of Cleveland, Ohio, and embodies the well-known K-W principle, but, in addition to providing current for the ignition of the engine, it also provides enough current to operate a 15-candlepower Tungsten bulb which, when used in a K-W searchlight, will give a 1,500-candlepower light that will locate logs, etc., between ¼ and ½ mile away. This magneto is sold complete with the necessary coil for from $20 to $45, depending upon the number of coils. The searchlight is sold for $10 ready for use, or a smaller portable light can be had for $3. This small light is handy to use around the engine. The reflectors in the searchlight are of an extra fine quality of reflecting lens and were especially designed by optical experts for use in this searchlight, and consequently permit the light to be much greater in intensity than it would be if the ordinary lens was used.

* * *

Waterbury Wireless Dry Battery Holder.

The Waterbury Wireless Dry Battery Holder is manufactured by Waterbury Brothers, of Washington, D. C., and consists of either a wooden or metal box attractively finished in which there are six dry cells. The battery holder which slips inside of the case has spring contacts which provide a perfect circuit without any further trouble than is occasioned by simply inserting the batteries. Any dry cell can be used for this holder and it is possible to remove a cell from any part of the holder without affecting the remainder of the batteries in any way, as the circuit is automatically completed over to the next battery. The connections on this device always remain tight and it is claimed that the device is absolutely waterproof. The price of the device is $10.50 in the wooden box and $7.50 in the metal box.

* * *

Dayton New Light Plant.

The Dayton Electrical Manufacturing Co., Dayton, Ohio, have recently introduced two attractive lines. The first is a 20 light plant, which has sufficient capacity to carry twenty 12 c.p. Tungsten lamps at one time, the battery carrying all lights for eight hours on a single charge, half the number for sixteen hours or five lamps for thirty-two hours; the cost of the outfit is $405. The company manufacture and supply equipments suitable for motor boats of any size and will send catalog on application. The second novelty is a portable lamp with guard and handle, fifteen feet of cord and attaching plug. This is a well-made and most useful article; its price is $2.50 complete.

* * *

The Premier Switch.

The W. S. Beebe Co., of 336 York Street, New Haven, Conn., manufacture the well designed and substantially constructed switch known as the Premier. All exposed parts are made of hard rubber. Wiring is front connected and there are no projections from the base to interfere with the free use of pliers or wrench when connecting up. The spring plug and socket make positive electrical contact and the front or cover effectually excludes all moisture or spray.

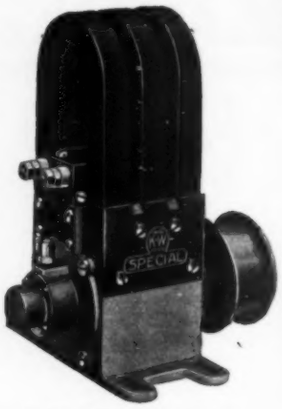
* * *

Neverout Electric Searchlight.

The Neverout electric searchlight is manufactured in two types by the Rose Manufacturing Co., of 910 Arch Street, Philadelphia. For use on boats which are equipped with storage battery or dynamo, number 94E is recommended. It is a relatively small but powerful light for making landings, picking up buoys, etc.; it is equipped with a silver parabolic reflector and a six-volt 16 c.p. Tungsten bulb. It is easily dismounted from position when not needed and can be stored in any convenient locker when not in use, a brass watertight plug fitting into deck socket when lamp is not in use; the cost is $12. Model 2E is a larger and more powerful lamp, having a face diameter of 10⅜ inches.

One of the New York coils.

The Red Head spark plug.

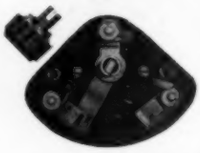


K-W Special magneto.

The Ideal spark plug.

Waterbury wireless battery box.

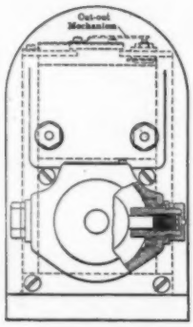
Red Seal dry cell.



The Premier switch.

The Rhodes unit sparking device.

The Neverout searchlight.



The Splitdorf cut-out mechanism.

Red Head Plugs.

The Emil Grossman Co., 250 West 54th Street, New York City, have added to the Red Head group a platinum point magneto plug with double dipped and highly polished nickelplated shell, bushing and cap, which finish harmonizes with the plated trim of high powered automobiles, for use with which the new plug has been introduced. It is of interest to know that one of the reasons why it took some months to place this plug on the market was the difficulty of perfecting the process of welding the platinum cup to the central electrode. A combination screw cup and magneto type terminal which will accommodate, snap, ring or slip cable connections, gives further individuality to the plug, which is priced $2. A set of Red Head spark plug wrenches is given with every four plugs. The fact, however, must not be lost sight of that the new plug is precisely similar in construction to the regular magneto plug with the exception of the platinum point welded through the center electrode. Red Rib cable is another of the Grossman Co.'s specialties. It is constructed of a series of layers of high grade rubber instead of the usual solid core. A very important point is that all the layers and conductor are centered, and further all copper conductors are tinned to obviate possibility of corrosion.

* * *

Manhattan Co. Specialties.

Two specialties manufactured by the Manhattan Electrical Supply Co., of New York, Chicago, and St Louis, appeal to owners of motor boats. One of them is an electric motor boat horn which is made from heavy wrought brass, highly polished, with either long or short projector and equipped with conducting cable and a weatherproof push button which can be fastened to any part of the boat convenient to the operator. Its distinctive feature is a clear resonant tone which is easily distinguished above other sounds for a long distance, and which is said to be delivered at a saving of from one-half to two-thirds of the current normally consumed by motor boat horns Another specialty of the company's is the Red Seal dry battery, either round or square; this is a guaranteed cell, suitable for motor boat ignition.

* * *

The Rhodes Unit Spark System.

This sparking device is manufactured by the New York Coil Company, of New York City, who also make spark coils of the regular type. The unit spark system consists of a device which is fitted on the timer shaft and takes the place of the latter instrument. There is one non-vibrating coil which will serve any number of cylinders by means of a distributing apparatus. The makers claim that water may be poured on the device without impairing its efficiency in the slightest. The device can be attached to almost any engine without any great difficulty and it is claimed that it can give all the advantages of a high-tension magneto without any of the disadvantages. Six dry cells serve to operate the device.

* * *

Splitdorf Electrical Equipment.

The present demand for the effective lighting of motor boats has resulted in manufacturers making exhaustive trials of various devices calculated to simplify the operation of the lighting plant while retaining its efficiency. The Splitdorf Electrical Co., of 98 Warren Street, Newark, N. J., confirmed in the belief that such a lighting outfit, to be ideal, should have as few parts as possible, has designed an equipment consisting of a highly efficient generator, a fuse box and ammeter, and all controlling devices, that is, the parts regulating the output of the generator as well as the flow of current to the battery incorporated in the machine, which is dust, oil, and waterproof. A feature of the generator is the method of compensating for the various boat speeds. This is accomplished by the differential windings and obviates the use of friction clutches, governors, or similar devices. We illustrate the cut-out mechanism which closes the circuit from the generator to the lamps when the former has reached a speed giving a voltage slightly above that of the battery.

J. D. Spark Plugs.

The Jeffery Dewitt Company, of Detroit, Mich., will offer fifteen types of spark plugs this season. The line will embrace both conical and petticoat types attached to spark plugs with or without the closed ends and with or without platinum points. In addition to the well-known Reliance Plug and the J. D. Plug the company will market a new type of plug which will be known as the Visible Spark Plug. This plug has incorporated in the porcelain a piece of plate glass, through which the center electrode can be seen. There is a small gap in the electrode, across which the spark has to jump. The gap on the electrode can be adjusted so that if necessary it can be closed entirely and only opened when it is necessary to inspect the ignition circuit. The makers claim that the small gap will increase the heat of the spark at the terminals and will in no way use up any extra current. They also claim that when the plug is fouled it can be cleaned automatically by increasing the spark gap. This plug sells at $1.00.

* * *

Herz's Ignition Devices.

Herz & Company, of 295 Lafayette Street, New York, manufacturers of magnetos for marine purposes, have made some improvements in their magnetos for 1913. Model 4 U I has been equipped with a device which insures the strong hot spark, even when the magneto is set at full retard. It is also claimed that the motor can be run at lower speed than is usual with this type of apparatus. The company have also increased their line so as to include a special heavy duty type of magneto. These new magnetos are specially designed for use on heavy duty engines.

* * *

Comet and Sootless Spark Plugs.

The Oakes & Dow Co., of Boston, Mass., are the manufacturers of a general line of ignition specialties for motor boats. Among their specialties may be mentioned the Comet and the Sootless Spark Plugs. Both of these plugs are of the mica insulated type. In the Sootless plug there is no asbestos packing to blow out or loosen and there are other improvements. Comet Spark Plugs are made with the mica insulating wound around the center electrode instead of being slipped on in the form of small washers. The company claim that the plugs using washers for insulating purposes do not have anywhere near as great insulating properties as their Comet and Sootless plugs. These plugs are made in various sizes and sell at a popular price.

* * *

Packard Cable.

The Packard Electric Co., of Warren, Ohio, are the makers of a line of high and low tension cable for motor boat use. Their cable is exceptionally well insulated. One of the chief requisites for the success of motor boating is that the electrical appliances will successfully do their work. If a cheap or poorly insulated high-tension cable is used there will be constant trouble with the ignition of the engine. While Packard cable is not sold at as low a price as some of the other cables, it more than pays for itself by the increased confidence that can be placed in it and by its long life.

* * *

American Battery Co's Lighting Equipment.

The American Battery Co. of Fulton Street, Chicago, are manufacturers of a complete and compact electric light plant which, in addition to maintaining from 8 to 15 sixteen c.p. Tungsten lamps, will operate an air compressor, or in fact any light machinery. The plant costs $280 as supplied, but at an additional cost of approximately $25 a propeller shaft may be directly coupled to the dynamo shaft and any boat up to, say, eighteen feet, can be driven by the engine direct. When all the power is not required for propelling the boat some of it may be used to charge a storage battery, which will in turn furnish current for any needed lights. In an emergency the dynamo can be run as a motor and under normal conditions the battery would have sufficient power to so run it for a couple of hours. The engine delivers about 1½ h.p. direct from the flywheel.

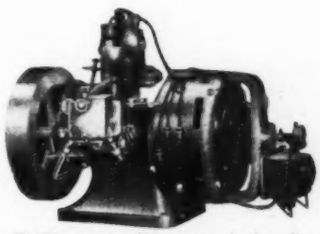
A-C Spark Plugs.

The Champion Ignition Company, of Flint, Mich, are bringing out their line of spark plugs for 1913. They claim that their plugs do not leak compression and are so simply constructed that it is almost impossible to put them together in anything but the right way in case it has been necessary to take them apart. The packing is of a composition that will not spoil with use either from heat or oil. The metal shell is so arranged that when pressure is applied to tighten the porcelain the latter will not turn on the gasket but will carry with it both gasket and washer. This washer acts as a burnishing tool, and as it revolves gives a high polish to the bottom of the shell, thereby insuring a gas-tight joint.

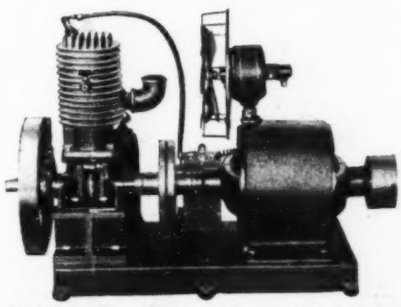
* * *

The Fenner Auto Light.

The W. A. Fenner Co., of Providence, R. I., are the makers of an electric auto launch light for use on motor boats. This light is of a six volt 8 candle power capacity and is attached to an 8 or 10 foot insulated cable. The shell is of fibre and all trimmings of handsome nickel plate. This light is only 3½ inches long by 1½ inch diameter and is specially desirable for use around the engine as a trouble lamp, inasmuch as it is perfectly safe, and is small enough to be inserted in the crank case or any narrow space around the engine.



One K-W generating set of the General Electric Company.



The American Battery Company's lighting equipment.

Hi-po Waterproof Dry Cells.

These dry batteries are made by the Lincoln Electric Co., of Brooklyn, New York. These cells are waterproofed by being inclosed in an insulated waterproof case with only the terminals projecting. This case makes the batteries particularly desirable on motor boats where dampness so often ruins dry batteries of the ordinary type. These cells for motor boat use are made in a size 6 inches long and 2½ inches in diameter and are sold for 25 cents apiece by all dealers in electrical and motor boat supplies.

* * *

Anderson's Spark Plugs.

The Anderson Glass Spark Plug is manufactured by the Anderson Spark Plug Co., of Baltimore, Md., and consists of a steel shell with a block of clear glass welded through the center of the shell. The center electrodes run through the glass; and at all times the condition of the spark can be observed through the glass. The glass, of course, is a perfect insulation and is absolutely gas tight. The price is $1.50.

General Electric Co's Generating Sets.

The General Electric Company, Schenectady, N. Y., have for years built gasoline engines to meet the exacting specifications and rigid tests of the United States Government, these, coupled to generators of established reputation, constitute the company's gasoline electric generating sets and no effort has been spared to make these masterpieces of reliability and economy. The parts are accessible and interchangeable, they operate quietly and with a minimum of attention. The engines of sets rated 3, 5, 10 and 25 kilowatts are of the four cylinder, four stroke, cycle type. The engine of the one kilowatt set, which we illustrate, is of the single cylinder two cycle type. This set is designed to meet the demand for a small well-regulated substantial lighting and power set and is constructed of as few parts as are compatible with efficiency, reliability and strength. The two cycle engine is of the three port type with a throttle valve in the transfer port between the crank case and cylinder.

* * *

National Storage Batteries.

The U. S. Light and Heating Company, 30 Church Street, New York and offices in the principal cities, specialize on the National vehicle battery and the National sparking battery. The former is designed to fit the battery box of all electric pleasure and service craft, thin, medium, and standard plates being manufactured, all cells are balanced and consequently wear is evenly distributed. The sparker will, the manufacturers state, run longer, cost less to maintain, give a longer and hotter spark, and in short give their owners a better sense of satisfaction than any other sparker on the market. They are made in all sizes.

* * *

Spit Fire Spark Plug.

A. R. Mosler & Company, of Mount Vernon, New York, are the makers of the well known Spit-Fire Plugs. These plugs are made in a new special design for motor boats, with platinum points and porcelain hood protectors. It is claimed by the makers that leading motor boat manufacturers in the United States have found that the Mosler Platinum Pointed Spark Plugs have increased the power of the engine over 10 per cent. owing to the fact that the spark is shot with considerable velocity down into the center of a combustion space, and this causes the compressed gas to explode quickly.

* * *

Dow Ignition.

The Dow Mfg. Co., of Braintree, Mass., are the manufacturers of high-grade ignition specialties for motor boat and automobiles. The line includes mica insulated spark plugs with various styles of points, spark coils in any number of units, battery and other electrical switches for both high and low tension current, and also the well-known Dow Perfected Magneto. This magneto is very light in weight and small in size and employs what is known as the Arc flame system which gives an arc flame at the electrode of the spark plugs. This means that each spark at the plug is followed by an arc flame which lasts for an appreciable time and which is incandescent in heat. It is claimed that the lingering flame adds to, and guarantees completeness of the combustion.

* * *

Marine Electric Light Outfit.

The Richardson Engineering and Manufacturing Company of Hartford, Conn., manufacture a line of electric light outfits for use on motor boats and yachts. There is also a special house boat type which is a complete electric light plant in itself, there being a small 1 h.p. Brownie engine running a generator which gives a output of 110 volts and six amperes. Two other sets are made, one operated by a 3 h.p. and the other by a 6 h.p. engine which gives complete lighting arrangements for a house boat of even the larger sizes. The 6 h.p. set has also a power bilge, and air pump. For small boat lighting there is a six light outfit made that sells for $110 complete. This outfit includes a switch-board with the necessary instruments, a three cell storage battery, an 8 ampere generator which is designed to run from the engine and a complete set of fixtures.

The Holtzer-Cabot Magnetos.

The complete line of high and low tension magnetos is manufactured by the Holtzer-Cabot Electric Company, of Brookline, Mass. These machines are made in various sizes and types so that they will fit any engine on the market. The magnets in all types are removable so that the armature can be removed in case repairs or inspection are necessary. The armature, however, should need no attention as it is of laminated type with a large number of slots and the commutator is also finely divided for the purpose of obtaining an even flow of current. It is impregnated with a high grade of insulating compound which renders it moisture-proof and as it is fully enclosed it is protected from mechanical injury. There are five different methods of obtaining the drives from the engine, so that practically any possible position or location of the magneto can be effected.

* * *

National Spark Coils.

National Spark Coils have been made for more than eight years by the National Coil Co., of Lansing, Mich. These coils are made in various types, but one of their specialties is a coil encased in a beautiful mahogany or imitation ebony. This coil is strictly waterproof, as it is treated with a specially-prepared compound and it is claimed that the heat-resisting qualities of the insulating are nearly perfect. This coil is equipped with a two-point switch, is mounted on the front of the box so that it can be easily reached by the operator. The company also manufactures spark plugs and will be pleased to send catalogue of their complete line upon receipt of a postal.

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Heinze Electric Specialties.

The Heinze Electric Co., with a factory in Lowell, Mass., and sales offices in Detroit, Mich., are continuing their line of high grade ignition specialties for motor boats. They have three factories which are devoted to the manufacture of spark coils, timers, spark plugs, magnetos and other ignition devices, and they consequently are in a position to quote low prices on goods in any quantity. One of the specialties is a spark coil inclosed in a handsome metal case with a removable cover giving access to the vibrator adjuster. This case is fitted with a bracket so that it can be screwed directly to the side of the cylinder near the spark plug and connected to the latter with a short high tension cable. The coil is waterproof and owing to the shortness of the high tension cable there is little danger of a short circuit anywhere in the system.

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The Bsco Primary Battery.

These batteries which are intended to be used for supplying current for the ignition of the engine are of the primary type. There is only one connection to each cell of the Edison Battery and consequently there is just half the chance of a loose connection that there is with the other types of batteries, and nowhere near the chance that there is with a magneto of the high tension type. It is claimed that the Edison cell will not deteriorate even if left for a long time and that there is absolutely no waste as the only way in which the cell can loose its energy is by the current flowing through the wires to the engine in the regular manner. This battery is specially desirable for a heavy duty outfit. This cell is made by Thos. A. Edison, Inc., of Orange, N. J.

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Perfex Ignition.

The Electric Goods Mfg. Co., of Boston, Mass., are the manufacturers of the well known Perfex System of jump-spark ignition. This device consists of a small spark coil inside of a perfectly water-proof hard rubber case in the lower end of which a spark plug is inserted so that the threads in the plug project. The condenser and vibrator are located in the top of the case under a metal cover. By twisting the cover the vibrator point can be adjusted. This outfit is perfectly water-proof as there is no high tension wiring outside of the case. The wires from the low tension magneto or the batteries that are used as a supply of current are run direct to two binding screws on the sides of the case, the timer, is of course, in the circuit. The spark plug used in this device is the well known Reliance Plug manufactured by the Jeffery-Dewitt Co. in Detroit, and new plugs for the Perfex System can be obtained either from them or from the Electric Goods Manufacturing Co. or their dealers.

Comet Magneto.

The Hendricks Novelty Co., of Indianapolis, Ind., make a line of magnetos for motor boat use. One of their leading types is known as the Comet magneto which represents fifteen years experimenting and building magnetos. This is a combination model for the use of either jump or make and break spark and it will give a uniform spark equal to that given to 6 full-power dry cells. This magneto weighs only 10 pounds and is 4 x 5½ x 9" in size. The price is remarkably low considering the quality of the machine, as the entire outfit complete can be had for $12. The governor that is fitted insures a constant speed of the magneto regardless of the speed of the engine or the size of the fly-wheel.

* * *

A New Spark Plug Case.

A. R. Mosler & Company, Mount Vernon, N. Y., makers of the well-known Spit-fire Plug, have instituted an innovation for the holiday and show season which should prove very attractive to the motor boatman. The spark plug case is handsomely made of an excellent quality of leather and is to be given away during this period to every purchaser of six Spit-fire platinum-pointed plugs, which sell in the half-inch or metric size for $7.50 or in the seven-eighths-18 thread (alam) size for $9.00. These plugs have the patented base construction protecting the porcelain and sparking point and which acts as a condenser to shoot a flame into the cylinder so as to fire the charge with unusual efficiency.

* * *

The Auto Sparker.

The Motsinger Mfg. Co., of Lafayette, Ind., are the manufacturers of the Motsinger Auto Sparker which is designed for use with either two or four cycle jump or make and break spark engines. The appliance will generate electricity for igniting the engine or charging storage batteries from which current can be taken for electric light and other purposes. The device is equipped with an improved type of governor which always permits the device to run at the same speed as the engine, that is, the pulley on the sparker runs at that speed, but the output of current is the same in all cases after a certain speed is reached.

Reversing Devices

EVERY motor boat irrespective of size, should be equipped with some positive method of reversing either the direction of the motor or the propeller.

On large engines of over 100 horsepower there is often a means of reversing the motor itself with compressed air which is kept stored in a tank, but as the apparatus is not only costly, but bulky, it is out of the question for small boats, and will not be taken up in this article. Neither will the method of reversing large four-cycle machines by shifting the cams and lifting in a new set, as this is only applicable to the largest types of motors, and must be built as a part of the motor.

The method of reversing a one or two-cylinder two-cycle motor by opening the switch and then closing it again as the motor slows up, taking a chance that you will catch it as the piston is going up, is fast being done away with. It is perfectly possible for one to practice this method until one is able to do it nine times out of ten, but it is usually the tenth time that happens to be the time when you really need the reverse to keep you off some rocks, or from collision. The liability to strain, and sometimes break the crankshaft by closing the switch at the wrong time, has caused engine builders without exception to recommend some other means of reversing.

Reversing by means of a gear is the method in most common use, and it is as positive as anything can be that employs machinery to accomplish some action. With a little care regarding lubrication, and adjustment of parts, a gear should give no trouble. The average reverse gear consists of a drum, within which there is a set of planetary gears. The propeller shaft, which must be cut in half, is keyed to the drum at one end, and the other end is attached to the gears. There is either a band or a disk clutch operated by a lever that locks the gears to the drum when it is thrown into the forward drive, and the entire gear revolves, acting merely as a coupling. When the lever is thrown into the reverse position, the drum is clamped, and the gears are disconnected, so that they turn the propeller end of the shaft in the opposite direction to the engine end. When it is necessary to let the engine run and still have the boat stopped, the lever is moved to a neutral position, and as neither the gears nor the drum are clamped, the shaft aft of the gear does not revolve.

Another type of gear employs a sliding gear arrangement for the reverse, and two disk clutches for the locking of the parts. A counter shaft carries the gears that mesh with gears on the shaft when the reverse is needed. Both types of gears are locked on the forward drive so that there are no gears turning.

Reversing propellers, employing movable blades, constitute the other large class of reversing devices. These devices consist of the regular propeller shaft, which is not cut, connected to the engine at one end, the blades of the wheel are pivoted to the other end. A sleeve is slipped over the shaft and connected to a lever on the inside of the boat so that the sleeve can be slipped forward and aft along the shaft. The outboard end of the shaft is connected to a shell-like hub that fits over the pivoted ends of the propellers. By moving the lever the blades are caused to move around on their own axes from full pitch astern to full pitch ahead. With the lever in a neutral position the pitch is neutralized and the boat remains stationary. There is also the advantage that the pitch of the wheel can be altered to suit the requirements of the boat and engine. If carefully and strongly built the reversing propeller provides a very efficient means of control.

A variation of this principle designed to prevent the engine speeding up when the blades are in the neutral position consists of a four-bladed wheel, in which two of the blades are set directly in front of the others. The blades are actuated so that one pair keeps the load on the motor while the other is passing its neutral point, and at the actual neutral one set of blades is working against the other. Therefore delicate manipulation is possible.

A device for reversing a two-cycle engine on the spark has been on the market over a year and it is claimed for it that it will give an absolutely positive reverse every time without strain on any part of the engine. It operates on the principle of opening and closing the switch, as mentioned at the beginning of this article, except that with this device there is no chance of missing the proper point to close the switch, as that is done automatically by centrifugal force.

Columbian Propellers.

The Columbian Brass Foundry, of Freeport, N. Y., will continue to make their well-known line of speed and towing propellers with which they had such a successful season during 1912. These wheels are made in all sizes, from 10 inches in diameter up. These wheels, it will be remembered, were used on some of the leading speed boats during the past season and the company looks forward to having another very successful year. A reversing propeller has been put on the market during the past season by the firm and has achieved almost as much success in its own particular line as the solid wheels did in theirs. The reversing wheel is a very compact type with few moving parts and a rather small hub. This wheel is made in all sizes.

* * *

Gray's Specialties.

A very compact reverse gear is manufactured by the Gray Motor Company, Detroit, Mich. This gear was formerly known as the Samson Reverse Gear, but for quite a while has been manufactured by the Gray Company. The gear is entirely enclosed and runs in an oil bath. The company state that the gear is particularly desirable for auxiliary boats inasmuch as the propeller shaft is free to revolve when the lever is the neutral position without any drag whatsoever. This gear is only made in one size which will transmit 15 h.p. at 600 r.p.m., 17 h.p. at 800 r.p.m., 24 h.p. at 1,000 r.p.m., and will hold a 4-cylinder 25-h.p. engine turning 1,000 revolutions. The price of this gear complete with coupling and two thrust bearings is $28.

* * *

Baldridge Gears.

Baldridge gears for 1913 will include five new models suitable for engines from 4½ to 60 h.p. In these new models the manufacturers, The Baldridge Gear Company, of Detroit, Mich., have retained all of the features that have proven so successful in their past years and have added numerous improvements and refinements which will be at once recognized by experienced users. The clutch is of very powerful construction, being of the internal expanding type, and the brake band for the reverse is of special alloy steel. The gear is entirely enclosed in either iron or aluminum housings and there are no moving parts outside of the case with the exception of the control lever. This prevents any throwing of oil or grease around the boat. Another improvement is the fitting of the control handle into a socket so that the company can furnish levers of any length to suit the needs of the customer.

* * *

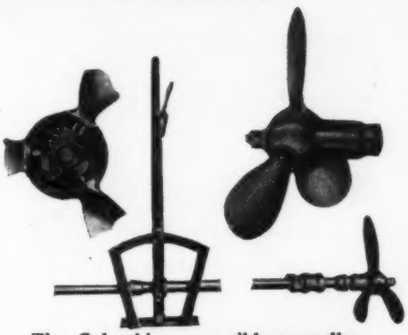
Thompson Feathering Propeller.

The Thompson Feathering Propeller is a movable blade wheel designed for use upon auxiliaries. The idea of the wheel is that as soon as the engine is stopped the blades turn with their flat surfaces parallel with the keel. It is a well known fact that the ordinary type of propeller wheel is quite a detriment when an auxiliary boat is under sail, as the drag of the propeller makes a difference of sometimes as much as a mile an hour. The Thompson propeller which is manufactured by the Noyes Machine Co., of So. Portland, Me., is entirely automatic in action and requires no sleeves or rods inside the boat to operate it.

* * *

Joe's Reverse Gears.

Joe's reverse gears and one-way clutches, manufactured by the Snow & Petrelli Company, of New Haven, Conn., have been on the market for a good many years and are supplied as standard equipment on many high-grade engines. The company makes an especially-constructed gear for high-powered speed boats and hydroplanes, where the highest efficiency and strength is required with a minimum of weight. They also make a gear known as their "Duplex Drive," which has been designed for use on heavy-duty engines requiring a gear of great strength and reliability. All of these gears for 1913 will be of the multiple disc type. The alternate disc being of hardened steel while the others are of ground steel and bronze. The company also make safety rear starters, flange and sleeve couplings, and one-way clutches.

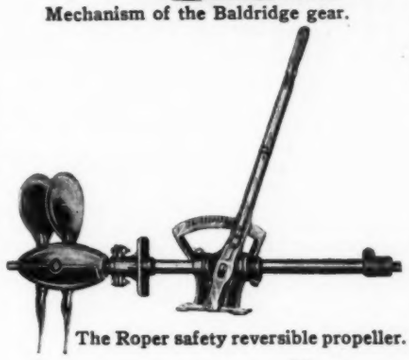


The Columbian reversible propeller.

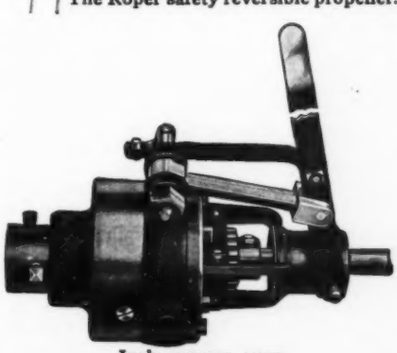
The Baldridge gear cage.

The Baldridge reverse gear for 1913.

Mechanism of the Baldridge gear.



The Roper safety reversible propeller.



Joe's reverse gear.

Pearl Reverse Clutch.

The Pearl Machine Co., of Detroit, Mich., are the manufacturers of a reversing gear designed for use on motor boats. The device contains no gears whatever, the reverse motion being obtained by a friction wheel. It is claimed by the manufacturers that this gear does not slip and that it gives an instant reverse without any unpleasant jarring. Further particulars of the device will be sent by the company upon receipt of a postal card request.

* * *

Oxford Reverse Gear.

The L. D. Robbins Co., of Lynn, Mass., are the manufacturers of the Oxford Reverse Gear which is rather different than other gears that are upon the market. The clutch is of the disc type with a positive drive and it is claimed that this drive prevents all unnecessary wear upon the gear. They also state that the gear can be thrown from full speed ahead to full speed astern without straining any part of the gear unnecessarily. The mechanism of the gear is very simple and compact and, owing to the positive nature of the clutch, the gear is practically noiseless in action. The Robbins Co. have an attractive circular containing further description and prices which they will send upon request.

* * *

Ball Reverse Gears.

The New York Gear Works, of Greenpoint, Brooklyn, N. Y., are the manufacturers of the improved reverse gear for motor boats that has been on the market for many years. The company make four sizes of gears as stock models but will build larger sizes upon order. The train of gears is of the planetary type, the gears themselves being made of hardened steel and all of the spur type. The drive ahead is accomplished by an internal expanding brake band and the reverse drive is accomplished by means of a contracting brake band. The shifting lever is located in the center. Catalogue and prices will be sent upon receipt of a postal.

* * *

Gies Gears.

The Gies Gear Co., of Detroit, Mich., are the manufacturers of the Gies Reverse Gear and state that there are over 15,000 gears in use. They manufacture 3 models of these gears, all of the planetary type. The first model is known as "Special No. 1" and transmits 1½ H. P. at 100 revolutions of the engine. This model sells for $12.00. Their model "A" gear transmits 2½ H. P. also at 100 R. P. M. This gear costs $24.00. The model "B" gear will successfully hold an engine developing 4 H. P. per 100 R. P. M. This last type of gear is sold for $48.00 complete. The company publishes an attractive catalogue which will be sent free upon request.

* * *

Philadelphia Gears.

The Philadelphia Gear Works, Inc., of Philadelphia, Pa., are manufacturers of gears of all types and sizes, including rawhide noiseless gears. They have stock gears always on hand of standard sizes and will make up on order any type or size of gear. The company also specialize in the manufacture of machine chains for use with steering wheels or to drive pumps, magnetos, oilers, etc. They publish a very attractive catalog describing their line and giving the prices of the various types and sizes.

* * *

Monarch Marine Clutches.

A line of heavy duty reverse gears has been marketed for several years by the Grand Rapids Gas Engine and Yacht Company. The clutches are made in five different sizes which will transmit from 5 to 120 h.p. These gears can also be had with an extra set of gears in the case for use with the heavier type of engine. Particular attention has been paid to the design of the thrust bearings. These are of the thrust collar type running in babbitted grooves with automatic oiling arrangement. The shifting lever is arranged so that it locks automatically in the forward and reverse position.

The Sintz Reversing Propeller.

It has hitherto been generally thought that a reversing gear was necessary in the case of large-sized wheels, for the reason that it was considered impossible to provide a sufficient margin of strength to enable the reversing type of propeller to be used. The Sintz propeller has, however, been made and supplied up to 46 inches diameter, and its manufacturers, Wilmarth & Morman Co., of Grand Rapids, Mich., state that not only is the propeller a heavy duty one with perfect reversing efficiency, but that it is a simple matter to so adjust the pitch to accommodate the load or speed, as in the case of hitching on to a tow. This adjustment to the needs of the moment can be effected while the boat is in operation. Prompt delivery can be made from stock.

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Paragon Marine Speed Gear.

One of the principal points emphasized by the Evans Stamping & Plating Co., of Taunton, Mass., manufacturers of the well-known Paragon reverse gears, is that this speed gear is the only one of its kind in the world which is not dependent, like others, on a positive locking device on the forward drive. The company's argument being that a clutch which is strong enough to hold the engine does not require such a lock, which has, they claim, serious disadvantages. Four of these gears have just been completed for the four Blanchard oil engines installed in two fishing boats which are being built to go around Cape Horn for operation in the Pacific fisheries. Peter Pan V, and Detroit, which made the memorable Atlantic crossing, were equipped with Paragon gears.

* * *

The Johnson Marine Reverse Gear.

The Carlyle Johnson Machine Company, of Manchester, Conn., manufacturers of the Johnson Marine Reverse Gear which was first put on the market in 1902, have added to the line a new gear of entirely different construction. These new gears are manufactured in three sizes which transmit from 1-40 h.p. The gear is completely enclosed so that it is possible to run the gear in an oil bath. The gearing and shafting are small in diameter in order to keep the construction compact, but are made of vanadium steel, thus giving the parts great strength in comparison to size.

The Sintz reversible propeller.

Moore reverse switch.

Paragon reverse gear.

The new Johnson reverse gear.

The Moore Reverse Switch.

The Moore Reverse, manufactured by J. B. Moore, of Washington, D. C., is a small device weighing not over one pound, which is guaranteed to positively and quickly reverse any one, two, or three-cylinder, two-cycle motor using either jump or make and break sparking devices, with the exception of those using a high tension magneto instead of a coil. By pulling a chain it is possible to reverse the engine, start it ahead again or slow it up; it is also possible to stop the motor by manipulating the same chain. The price is $7.50 for the single cylinder outfit or $10 for the double. Installing can be done by purchaser or by one of Mr. Moore's agents for from $2 to $3. Gerald T. White, 132 Nassau Street, is New York agent.

* * *

Michigan Reverse Gears.

The Michigan Wheel Company, of Grand Rapids, Mich., are the manufacturers of both reverse gears and reversing propellers. The reverse gears are made in four models and range in price from $18 upward. The gears are all of the planetary type and run in oil the entire time. The model "A" gear is completely enclosed and has a side-lever control. Models "C" and "D" are identical with the exception that the lever is on the side in the Model "C" and in the center of the Model "D" gear. The mechanism of the Model "E" gear is the same as that of the "C" and "D" models, but the bed plate does not continue all around the gear. The company also make a one-way clutch. The reversing propellers made by the company are made in two types, the standard type for ordinary boats and what is known as the "Hartford" wheel for speed boats. Both these models are made in either 2- or 3-blade, and employ solid shafting with a movable sleeve.

They have made improvements on their expansion ring, and for 1913 they have to offer both the multiple disc and expansion ring types, enclosed and open.

* * *

Holliday Reverse Gears.

A reverse gear of exceptional strength and durability is manufactured by the Holliday Engineering Co. of Chicago. These gears are constructed with extra large friction surfaces which insure an easy engagement in starting and a positive clutch on the driver-head. Strength is not sacrificed to gain light weight, and they are particularly desirable for use on boats having heavy duty engines.

Silencers and Under-water Exhausts

IN order that a motor boat may be fully enjoyed, it is necessary to provide some way in which the noise of the exhaust may be lessened as much as possible.

The great trouble with silencing devices in the past has been that the greater their silencing properties, the greater also was the back pressure they caused in the muffler. This defect made a noticeable difference in the speed of the motor. This was noticed in both two and four-cycle motors, although the two-cycle type seemed to suffer more owing to the short time allowed for the scavenging of the cylinder.

Inventors and gasoline engine designers have burned much midnight oil in an effort to get a device that would give no back pressure and still silence the exhaust. This has been accomplished in several different ways. The first of the methods is the employment of what is called a muffler. This consists of a cast or sheet iron drum, into which the exhaust is led at one end and permitted to escape into the open air from the other. On some of the slow speed engines that have an appreciable space of time between the explosions there is not as much necessity for any additional devices inside of the muffler as there is on the higher speed engines. The muffler in this former case is often nothing more than a tank in which the gases are allowed to expand. It may be well to mention here that it is not the sound of the gas being exploded in the cylinder that we hear, but the noise of the outgoing burnt gas, which is under very high pressure, striking the air.

When used with higher speed engines perforated or slotted plates are usually introduced inside of the drum. These plates are usually located at the end of the drum furthest away from the engine, the balance of the drum being left for an expansion chamber. The gases rush into the expansion end of the drum and are partly expanded and then strike the plates, where they are diverted and circulated until they are sufficiently cooled and their force lessened so that they can be let out into the air without any great pressure behind them.

Owing to the heat of the exhaust gases it is usually advisable to let the cooling water from the engine jackets into the exhaust pipe and through the muffler. Several mufflers, or silencers as they are then called, have been marketed that take advantage of this cooling water and make it serve both for cooling the device and assisting with the silencing by cooling and thus contracting the gases themselves.

Several years ago a device to allow the exhaust to escape under water was put upon the market. Soon there were several dozen of these devices put on sale by as many different makers. They were of all sizes and all styles, and many of them had been marketed without any previous trial or any serious consideration of the uses to which they were to be put. Motor boatmen bought them as quickly as they were made, and naturally some of the customers who had bought the untried ones were disappointed with the results they received. There are still several of these appliances on the market and in every case they are among those that were put on the market first. They have stood the test of time, and the fact that they are still on sale is sufficient proof that they were not among the ones that were made without either design or trial; it is again a case of the "survival of the fittest."

While they all differ in some way, the general idea is the same. The part that goes under water is a small scoop-shaped affair of brass or iron fastened tightly to the hull with the opening aft. The exhaust pipe is led from the engine to an expansion chamber, and then through the hull into the scoop. From there it is drawn out by the vacuum caused by the water running by the scoop as the boat moves forward. A small valve is sometimes fitted, so that the pressure in the expansion chamber can be reduced when the boat is standing still with the engine running, and there is consequently no vacuum created in the scoop.

"Yankee" Silent Muffler.

The Yankee silent marine muffler is manufactured by the Yankee Co., 1 Genesee Street, Utica, N. Y., who advance many reasons why it should be used in preference to others. Perhaps the principal claim made is that when the Yankee is fitted, gasoline consumption is reduced, on account of the perfect manner in which the muffler discharges burnt gases at each explosion. Other points are simplicity of fitting, absence of loose parts and durability. The manufacturers give a full guarantee and agree to refund purchase price and transportation charges if not satisfactory.

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The Forbes Swirling Muffler.

The Forbes swirling muffler, manufactured by Marine Devices Co., 43 High Street, Boston, Mass., is made up of two parts, namely, the expansion or swirling bowl and inlet pipe, which together embody a combination of three different cooling effects. In the first place the exhaust water from the engine is introduced into the middle of the exhaust gases just as they enter the muffler. They pass together down the bell-shaped pipe, strike a reservoir of water and their impact against this causes it to be sprayed throughout the bowl. A deflector plate gives to the gases a swirling motion, which is aided by oblique ribs at frequent intervals on the sides of the bowl. These several cooling effects so materially reduce the gases they escape with practically no noise. Prices range from $7.50 for one and a quarter inch inlet and outlet to $12.50 for a two and a half inch inlet and two-inch outlet.

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The Monarch Muffler.

This device which is manufactured by the Grand Rapids Gas Engine and Yacht Company, of Grand Rapids, Mich., is of the water-cooled type. The exhaust strikes a spray of circulating water when entering the two-part iron muffler. It then passes through about ½ inch of water and is cooled, condensed and deodorized. It then emerges into an expansion chamber from which it is led outboard almost noiselessly. The device is manufactured in sizes from 1½-inch to 3½-inch and sells for from $5 to $18.

* * *

"La Belle" Under Water Exhaust.

This under-water exhaust is claimed not only to be noiseless but to increase the speed of the craft to which it is fitted as owing to its shape outside friction and resistance are reduced to a minimum. Under water exhausts have special interest owing to the feeling in favor of this type when compared with these which exhaust into the open air. La Belle sells at $9 for 1¼ ins. and $15 2 ins. It is manufactured by C. D. Durkee & Co., 2-3 South Street Street, New York City.

The Yankee silent muffler.

Durkee's underwater exhaust outlet.

Forbes' swirling muffler.

The Ejector muffler.

Michigan Exhaust Silencers.

This silencer, which is manufactured by the Michigan Wheel Company, of Grand Rapids, Mich., employs the overflow from the water-jacket of the engine to condensing the exhaust gases. The gases are forced over a corrugated bell-shaped affair over which the exhaust water flows. This device is made in both cast iron and aluminum and sells for from $6 to $24 in sizes from 1-inch to 2½-inch.

* * *

Thermex Silencers.

These silencers are manufactured by the Thermex Silencer Works, of East Boston, Mass. They are of the type that employ the water from the engine in assisting the silencing of the exhaust. The device is made in two types: the first type is for standard heavy-duty or family boats, and the second type is a lightweight device for boats where light fittings are essential. The makers claim that the device is perfectly cooled and that, in addition to the silencing of the exhaust gases, they are also deodorized. The device is constructed so that the cooling water cannot work back into the cylinder. It is one of the claims of the makers that the device will not only not cause any back pressure, but will positively increase the number of revolutions per minute.

* * *

Gray Exhaust Silencers.

This device which was formerly known as the Samson Silencer is now manufactured and sold by the Gray Motor Company, of Detroit, Mich. It consists of a cast-iron chamber in which there are a number of bell-shaped plates. The exhaust is let in one end and strikes the small portion of the plates over which it has to travel until it reaches the sides of the chamber and finds its way out the other end. This, of course, gives a large cooling surface and condenses the gases. The appliance is made in pipe sizes from 1¼ to 2½ inches and sells for from $4.75 to $8.

* * *

An Ejector Muffler.

As the name implies, the line of mufflers manufactured by the Motor and Manufacturing Works Co., of Dunkirk, N. Y., is designed on the principle of an ejector. The mufflers are composed of three expansion chambers which are formed by conical baffle plates, perforated top and bottom and arranged in two sets. The axial tube leading through the muffler is of varying diameter, and portion of the gas entering the muffler passes directly into the center chamber and through the second set of cones before the gas which enters the first chamber has passed through the first set, a portion of the gas passing straight through the center pipe at high velocity creates a partial vacuum in the third chamber. The effect of the combined movements of the escaping gases is that eventually the pressure in the muffler is reduced to less than that of the atmosphere and the gas escapes without either noise or back pressure.

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The Cavito Underwater Exhaust.

The Cavito Underwater Exhaust Company, Grand Rapids, Mich. This company manufactures an underwater exhaust silencer which is made to fit all exhaust pipe sizes from 1 to 2½ inches. The device consists of a bronze or iron casting which is designed to be screwed to the underside of the hull below the water line. It is shaped very much like a water scoop with the opening turned aft. There is a slit in the forward end of the scoop through which a sheet of water is projected which strikes against the exhaust gases and helps to cool and condense them. The forward part of the scoop is so shaped that it forms a deflecting plate which forces the water downward and creates considerable vacuum in the exhaust heads. This, it is claimed increases the r.p.m. of the motor as there is no back pressure when the device is properly installed. The prices of the device range from $3.75 to $12.

General

Indispensable Devices.

The articles manufactured by Mechanical Devices Company, of Watervliet, N. Y., have long been known under the trade phrase as "Indispensable Devices." Their line includes metal shaft logs with self-aligning stuffing boxes of all sizes and types so as to fit any boat. They also have the stuffing boxes made separately so as to fit boats already having shaft logs. Another device is a bearing of the self-aligning type, but without the stuffing-box attachment. This self-aligning bearing they also use in connection with their strut. This strut is made in either the single, or the "A" type. These struts are made so they can be adjusted as to length so as to fit any boat without the necessity of a special pattern being ordered. Another specialty of the company is the flexible shaft coupling which works on the principal of a universal joint except that the two ends of the shaft do not even have to be on the same centers. In this way the device compensates for any inaccuracies in the alignment of the propeller shaft and also permits the hulls of light boats to weave without binding the shafting. Flexible pipe connections, which permit the exhaust and other piping to be bent around the engine and through the hull, are also manufactured, together with an under-water exhaust header that operates equally well when the boat is being reversed. A high speed weedless propeller completes the line of devices made by this firm.

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Dixon's Graphite.

The Joseph Dixon Crucible Company of Jersey City, N. J., are the manufacturers of Graphite Lubricant for automobiles and motor boats. Dixon motor graphite is made of the very finest grade of flake graphite procurable. It is unaffected by any temperature encountered in the cylinder and forms a smooth protective coating on the cylinder walls and piston rings lessening the friction and increasing compression. The graphite can be introduced into the motor in two ways. The first method of introduction is by blowing a small quantity into the cylinder through the spark plug hole or other opening, this will insure the graphite settling all over the cylinder walls. For this purpose a dry oil can or oil gun can be used. The second method of applying the graphite is through the crank case. The powder should be introduced into the crank case in proportions of one teaspoonfull of graphite to a quart of oil. This graphite is also made for bearing and other heavy work.

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Bosch Magnetos and Plugs.

The Bosch Magneto Company, 223-225 West 46th Street, New York City, are now delivering in large quantities their new Z R type of waterproof magneto, which is especially adapted for motor boat engines. It is entirely enclosed and is waterproof not only in regard to the magneto itself but also as to cable connections. Their 1913 line includes the new three-point Bosch spark plug, which proved so satisfactory in 1912.

Waltham Marine Timepieces.

Special motor boat clocks are manufactured by the Waltham Watch Company, of Waltham, Mass., and besides the chronometer which they make for yacht and the larger class of motor boat which need a timepiece of this class, they market two types of motor boat clocks, designed to be mounted upon the bulkhead. Both these clocks are of the eight-day type and have a winding indicator which shows a red dial when the clock has become run down. The Model "S" clock has 15 jewels and is adjusted for temperature. The Model "D" clock is of practically the same type as the model "S" except that it is wound by twisting the rim around the outside of the clock and has no key or other projector. Both these time pieces sell for $25.00.

* * *

T & C Tiller Rope.

The Tucker & Carter Rope Co., 76 South Street and 167 Maiden Lane, New York, specialize on waterproof linen tiller rope made from best grade flax yarn, with a bronze rope center which will neither rust, shrink, or stretch. The flax yarn being waterproofed is impervious to weather, is very flexible, and will outwear any other known material under almost any ordinary working conditions, needing no further attention after being adjusted.

* * *

The Shipmate Range.

The Stamford Foundry Company, Stamford, Conn., manufacturers of the well known Shipmate range have almost always something new to show in connection with them. Just now it is a new size of Shipmate, as, although the line was already a long one (eight sizes), it was suggested that there was room for still another size to be placed between Numbers 15 and 32 and according Number 16 now makes its appearance. This is a four hole range of very convenient size and capable of doing a great deal of work, it is similar in appearance to Number 15 but has the same firebox as Number 32 with a slightly smaller oven. Those persons who have been associated for any length of time with nautical affairs either in connection with the mercantile marine or in pursuit of pleasure know Shipmate ranges so well that a detailed description is unnecessary.

Hitchcock Automatic Bailer.

The Automatic Bilge Bailer Co., of Brookline, Mass., are the manufacturers of Hitchcock's Automatic Bilge Bailer. This device is made in two types. The first type is for comparatively slow boats and will operate at speed of from 6-15 miles per hour. The second type is for all boats having a speed in excess of 10 miles per hour. Both of these devices are designed to fit on the underside of the planking, and are of scoop-shaped construction with the scoop opening aft. As the boat moves forward in the water it creates a vacuum behind the scoop which draws all the water that is in the bilge outward.

* * *

Cook's Lubricant.

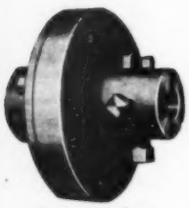
This lubricant, which is entirely different from Albany grease or any other product manufactured by Adam Cook's Sons, of 708-710 Washington Street, New York City, has been specially developed for use in the reverse gears of power boats after experimental tests extending over three years. The manufacturers claim it will cling to the gears at all times, that it acts as a cushion, that it cannot be cut up and packed aside by meshing teeth, but that on the other hand it will under every condition cover all parts of the gears.

* * *

Krice Carbureters.

The Krice Carbureter manufactured by the Krice Carbureter Co., of Detroit, Mich., has been on the market several seasons and has gained a very good reputation for ease of handling and economy. There is no needle valve in the carbureter; instead there is an annular opening through which the gasoline is drawn by the suction of the engine. The vaporizing is accomplished through the agency of capillary attraction which causes the gasoline to creep around the sides of the mixing chamber.

The Waltham chronometer.



Roper safety coupling.

One of the Michigan wheels.

T. & C. bronze center tiller rope.

One of the Detroit lubricators.

Schleicher Juwel yacht stove with swinging support.

The model 15 Shipmate range.

Sanborn marine speedometer and inlet tube.

Roper Safety Coupling.

The Roper safety coupling was designed by C. F. Roper & Co., of Hopedale, Mass., with the object of preventing damage to propeller and shaft should the former strike an obstruction. It is a device which takes the place of the regular coupling used between engine and propeller shaft and while providing a positive drive yet instantly uncouples engine from shaft when the propeller strikes. It is made adjustable, so that when first set up it can be arranged so as to suit the plant it connects. The cost is from $5 to $8, according to size of propeller and shaft.

* * *

Miller Supplies.

The firm of Charles E. Miller, which operates fifteen different supply stores in nine different states in this country is so well known that it is hardly necessary to give more than a slight description of some of the good things they handle. Among these can be mentioned the "Yankee Muffler," the "Gyrex Mixers," "Witherbee's Storage Batteries," the "Duplex Electric Horn" which gives a loud, clear note upon the pressure of a button and which sells for $10, and many other specialties in tools and engine accessories.

* * *

Detroit Lubricators.

A complete line of gasoline engine lubricators is manufactured in Detroit, Mich., by the Detroit Lubricator Company. These devices include every type of lubricator that is used on motor boats of any size and also the complete line of valves and shut-off cocks for gasoline, oil, or, in fact any place where an appliance of this kind can be used. The gravity lubricators are manufactured in many styles, but the firm's leader for the marine trade is a line of force-feed oilers for gasoline engines. These lubricators can be driven by a belt, a ratchet, or a direct gear drive, and the entire mechanism is enclosed in the oil tank. The tanks have a capacity of from 3 to 14½ pints of oil and cost from $10 to $87.

* * *

Nicholson Speed Indicator.

The indicator manufactured by the Nicholson Ship Log Co., of Cleveland, is entirely automatic in action and requires very little attention beyond changing paper record daily and winding clock weekly. The drum which carries the record paper shows a complete record of the vessel's movements for 24 hours. This instrument has no mileage counter, but distance covered can be computed by adding the average speeds for each hour shown on chart. The fact of the boat's speed being shown on a dial, with time and date recorded on chart, is of great convenience in navigating. The instrument, in mahogany case, may be placed in cabin, pilot house, or wherever convenient, and can be operated electrically or mechanically.

* * *

The Mello-Tone Auto Signal.

Two of the more important features of the Mello-Tone Auto Signal, which is manufactured by the Electric City Specialty Co., 163-165 Adams Street, Buffalo, N. Y., are that the tone of the signal can be regulated to suit the different exhaust pressures and also that the signal is adjustable, having patented clamps, it complies with all local and state laws and the makers guarantee that it produces no back pressure.

* * *

Sanborn Marine Speedometer.

The Sanborn marine speedometer, manufactured by the American Steam Gauge and Valve Manufacturing Co., of Boston, Mass., operates on the recognized principles of a low pressure gauge and is designed to show the speed of the craft to which it is fitted at any time. Our illustration shows the gauge itself which, when connected up with the inlet tube, tells you all you want to know of your boat's speed, and moreover tells you accurately. The inlet is protected against the influx of weeds, etc., by a specially designed cutwater and a clearing wire is also provided.

Caliph and Octa Binnacles.

John E. Hand & Sons Co., 222 Walnut Street, Philadelphia, claim that their steering pedestal binnacles possess distinctive features not to be found in any other type and that in addition the Caliph and Octa binnacles, where provision is made for correcting the compass, the compass, which is of the spirit type, is illuminated from below and the head or top in addition to its feature of trunnioning in the same axis as the compass from a closed to open position and vice versa, provides for a means of taking bearings accurately to degrees.

* * *

Thermos Bottles.

The American Thermos Bottle Co. are the marketers of the celebrated Thermos bottles, which are guaranteed to keep liquids hot for 24 hours, or cold for three days. These bottles are constructed of two glass containers, one within the other, with the space between exhausted by a vacuum pump. These bottles are specially desirable for use on motor boats as they do away with the necessity of having ice aboard the boat unless a large amount of solid food is to be carried. These bottles are sold at various prices from $1.00 upward.

* * *

The No-Shammy Funnel.

The No-Shammy gasoline funnel, which we illustrate, is so called because no chamois skin is used to eliminate water or sediment from the gasoline as it is poured into the tank. The desired end is achieved by the use of copper screenings of such fine texture that it is claimed that water can neither flow through it or even be forced through by the pressure of liquid above. The No-Shammy is faster than the chamios covered type, it is of convenient shape, and is made in three sizes.

* * *

The New Navy Anchor.

The manufacturers of the New Navy anchor, Wilcox, Critenden & Co., Inc., Middletown, Conn., claim that by reason of the V-shaped lug at the end of the shank the latter must slide to correct holding position at the slightest pull of the cable, and therefore the anchor will hold securely on any bottom. The shank is forged upon a solid bar without any weakening pinhole. The anchor is heavily galvanized and there are no mud carrying pockets in the head.

* * *

The Patterson Ventilator.

This ventilator is manufactured by the Milton Boat Works, of Rye, N. Y., and provides a means of perfectly ventilating a boat, and, at the same time, preventing the spray from finding its way below deck. It is so constructed that all driving rain or spray is trapped and carried out on deck while the air has a free passage at all times. This device is provided with a damper adjusted from the inside so that the amount of air entering may be controlled.

* * *

M. W. Fogg, Marine Upholstery.

Our cut illustrates an interior and an exterior, showing upholstery executed by M. W. Fogg, of 202 Front Street, New York, who has been manufacturing life preserver pillows, mattresses, and similar goods since 1845.

* * *

The Egyptian Mixer.

The R. D. Loose Mixing Chamber Company, of Spingfield, Ill., are marketing a device which is designed to fit into the inlet pipe of a marine motor and which, it is claimed, will help to break up the particles of gasoline and provide a much better mixture. The makers claim that the mixture is purified to such an extent that the trouble often occasioned by sooty spark plugs is done away with and that there is also an increase in the number of revolutions of the motor.

* * *

Breeze Carbureters.

The Breeze Carbureter Company, of Newark, N. J., are the manufacturers of carbureters of all sizes and types suitable for marine work and are also makers of flexible hot-air piping for leading warm air to the carbureters. They are now bringing out a carbureter with a dial adjustment for high, low and medium speed. Their new model "M" Colmac carbureter is especially designed for marine use and is sold at a low price.

* * *

Coyne Box Turbine Propeller.

W. E. S. Coyne, Grand Union Hotel, San Francisco is the inventor of the Box Turbine Propeller bearing his name, the latest type of which, the "Spear Head," has been fitted to the Police patrol boat of the City of San Francisco with remarkable results. Prior to the installation of the new propeller the boat used to make a bare 9 m.p.h. at 370 to 390 revolutions while with the "Spear Head" revolutions are reduced to 310 and the speed of the boat is increased to 12 m.p.h. or over 33%. The boat now turns in less than half the diameter previously required, reverses at much greater speed, and the vibration bogie is eliminated altogether. These facts arre vouched for by the Chief of Police, the Ferries Superintendent, the Police Boat Engineer, and by a well known launch and tug boat owner of San Francisco.

* * *

Sampson Tiller Rope.

The Sampson tiller rope is manufactured by the Sampson Cordage Works, Boston, Mass., of solid braided cord with wire cable center which will neither stretch nor shrink. The stock used is of extra quality and is guaranteed free from imperfections of any kind. A mahogany colored cotton cord with either phosphor bronze or galvanized steel center is also furnished. Bronze center is recommended for use on salt water. Prices of stock sizes from 3¼ cents to 6½ cents per foot, samples and quotations on application.

* * *

Boat Building Lumber.

To many amateur boat builders the most difficult part of their work is the purchasing of the lumber, owing to the fact that few regular lumber dealers carry a line of material suitable for boat work. The average lumber dealer carries material intended for house building which is not at all suitable for boat work. William P. Young & Bros., however, carry a full line of boat building material in their New York yard. Cedar planking in long lengths and widths and in several thicknesses can be obtained in any quantity and the line of oak in both planks and knees is large enough to suit any orders that might come in.

* * *

A Line of Metal Products.

Oshkosh Metal Products Company, Oshkosh, Wis., are the manufacturers of a complete line of boat fittings in brass and other metals. This company manufacture all their own stock and do their own polishing and electroplating. The company also manufacture a special type of under-water exhaust which, they claim, gives no back pressure at any speed, and perfectly silences the exhaust. The company is compiling a new catalogue which will contain descriptions and prices of every different kind of marine device.

* * *

Lubroleine and Neptune Launching Grease.

Fiske Brothers Refining Co., New York City and Newark, N. J., are specialists in the manufacture of lubricants ranging from clear water-white motor oil to the less refined but equally necessary substance which is used to persuade the newly built vessel that her proper element is water and that the sooner and the more smoothly she leaves the shipyard the better for all concerned. Lubroleine is called by its manufacturers the "aristocrat" of motor oils and is supplied in several grades. Crystal is the clear oil of low cold test and medium consistency. It is free from carbon-forming properties and is recommended for water-cooled engines. Lubroleine extra oil is a heavier lubricant, and should be used in cases where high compression and great crankshaft strains make it essential to use a heavy bodied oil. Gear case compound and lubricant, cup grease, and graphite grease, and Chariot auto soap are all leading lines.

Coyne box turbine propeller.

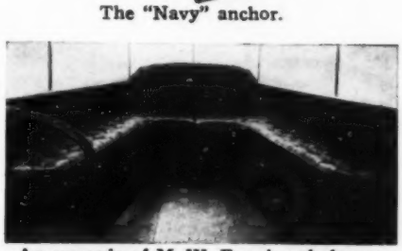
J. E. Hand & Son steering binnacle.

The Octa log.

No-Shammy funnel.

Sampson bronze center tiller rope.

The "Navy" anchor.



An example of M. W. Fogg's upholstery.

The Breeze carbureter and flexible hot air piping.

Hopkins Equipment.

John C. Hopkins & Co., of New York City, report a very successful past season and are already making plans for another season as successful. The company is constantly adding specialties to their complete line of boat hardware, deck fittings, paint, varnishes, whistles, bells, and in fact anything and everything that can be used in either the building or the operation of a motor boat or yacht. The company also handle a line of yacht tenders in both the skiff and dinghy types. They have a special type of dory which they sell including the engine bed already for the motor at a low price.

* * *

Hyde Turbine Type Propellers.

The Hyde Turbine propellers are made by the Hyde Windlass Co., of Bath, Me., from a special grade of Manganese Bronze, a non-corrosive metal of the highest tensile strength. This metal is the same as has been used in the manufacture of propellers for the naval vessels for the last fifteen years. The wheels are made from metal patterns which are correctly balanced. The blades are of large area and it is claimed for them that they run without the disagreeable vibration noticed with so many wheels. The wheels are manufactured in either two or three blade types, and in either right or left hand from 8 inches in diameter up to 30 inch.

* *

Boat Building Lumber.

Jordan Bros. Lumber Co., of Norfolk, Va., make a specialty of lumber for motor boat builders whether amateur or professional. Inasmuch as the lumber they handle is specially intended for the motor boat business, the boat builder is assured of the fact that he will buy lumber that will be capable of being steamed and bent. The company will pay freight to any place in the country on lumber orders. They are also the manufacturers of the Cedar Mooring Buoy. This buoy is made from a special grade of cedar that will not become water logged. The buoys are made in various sizes and are desirable inasmuch as they project quite a distance out of water and can consequently be handled without the use of a long boat hook or other unhandy means.

* * *

Aaron Automatic Bilge Pump.

This automatic bilge pump is made by the Aaron Automatic Bilge Pump Company, of Providence, R. I., and it is claimed for it that it will remove water, oil, gasoline, or vapor from the bilge without any attention on the part of the operator of the boat. The appliance is operated by suction created by allowing the circulating water from the engine to run through the pump. There are no moving parts except a small valve in the water circulation pipe and a pressure gauge. There is also a special relief valve which can be run to any convenient place and which gives warning whenever the pump should become choked up by sediment. The installation of this device is simple and the pump is made in sizes to fit any engine and sells at prices ranging from $20 to $85 complete.

* * *

Jeffery's Marine Glue.

The L. W. Ferdinand Co., of Boston, Mass., are the manufacturers of Jeffery's Patent Water-proof Liquid Glue. This glue is adapted for water-proofing the air tight compartments of life boats, etc., and also for repairing canvas on decks and canoes, and in combination with calico for the waterproof skins on diagonally planked motor boats. They also manufacture a variety of glue which is intended to be used between the deck planks on motor boats and yachts. This makes a waterproof seam and inasmuch as the glue is guaranteed to remain soft and flexible there is no danger of it cracking out of the seams when thev have opened with the shrinkage of the planking. The glue comes in black and white, and also in yellow and red colors and is sold in any quantity.

* * *

Edward Smith Spar Coating.

Edward Smith & Co., who have been known as varnish makers for eighty-five years, are the manufacturers of a high-class spar varnish for motor boat use. The makers claim that this varnish is light in color, free-working, elastic, durable and brilliant, and that it will dry sufficiently to be dust-free in eight hours. In places where a quick-drying varnish is essential, the Edward Smith Quick Marine Coating is excellent. This coating is adapted to all places where the regular spar coating could be used, but, owing to the fact that it will dry in from three to five hours and will not turn white, it is particularly adaptable to places that have to stand a lot of rough usage.

* * *

Curtiss Marine Plumbing.

The J. H. Curtiss Company, Inc., of New York, are the manufacturers of a complete line of plumbing supplies for marine purposes. The company claim that they have made some improvements in their discharging apparatus which overcome the difficulties that were experienced on the old-fashioned fixtures. Their line includes folding wash basins, sinks, toilets, bathtubs, and all the other necessary fittings for use on boats of any size.

* * *

Crockett's Varnish Specialties.

A line of varnishes, fillers and other finishing preparations is manufactured and sold by the David B. Crockett Company, of Bridgeport, Conn., especially for marine use. Besides the inside and outside spar varnish that they make, they have what they call a one-coat finish which is slightly cheaper than the regular spar composition and, owing to its quick-drying properties, it is very useful for touching up the little scratches and bruises which constantly occur about a boat. A waterproof floor finish for the interior floors of yachts is also made.

* * *

Bull Dog Paint and Varnish Remover.

Monarch Bull Dog Paint and Varnish Remover is manufactured under United States patents and is made up in the form of a cream. Chas. H. Gillespie & Sons of Jersey City, N. J., who are the manufacturers of this cream, claim that in use it is almost instantaneous in its action and that it does not become sticky or gummy nor evaporate readily. They state that it is free from all poisonous substances that are liable to injure the user, and that its odor is not disagreeable.

* * *

Hickok Name-plates.

The Hickok Manufacturing Company, of Rochester, N. Y., are specialists in the making of monograms and nameplates for motor boats. These articles are made out of a sheet of heavy polished brass, solid German silver, or nickel-plated brass. As these articles are all made to order, it is possible to have the name of your boat or your own initials made in any artistic fashion to suit your taste.

* * *

Bantam Bearings.

These bearings, which are made by the Bantam Anti-Friction Company, of Bantam, Conn., in both the ball and roller types are well known to the motor boat trade, as they have been manufactured for the last fourteen or fifteen years. These bearings are made from a high quality steel with either brass or steel frames and they are adapted for carrying either radial or thrust loads. They also make a thrust bearing with a bronze center collar between two steel collars that has neither rollers nor balls in its construction.

* * *

New Departure Ball Bearings.

The New Departure Manufacturing Company, of Bristol, Conn., are the manufacturers of ball bearings for use in motor boats and automobiles. The line consists of three types known as the "double-row," the "single-row" and the "radax type." The double-row type is a combined radial and thrust bearing having two rows of balls and sustaining loads from any angle. The single-row type is a strictly radial bearing having one row of balls and only taking a slight thrust. The radax type has only a single row of balls, but is so made that it will take both the radial load and a thrust load in one direction.

Trimount Accessories.

The Trimount Rotary Power Co., of Boston, Mass., have long manufactured a line of bilge pumps and whistle outfits for motor boat use. One of their most popular appliances is a rotary hand bilge pump. This little device will lift water 25 feet and will develop 30-pound pressure when used with a nozzle. This appliance takes up very little room as it can be mounted flat against the bulkhead and, owing to the fact that it is manufactured entirely of bronze, it is very nearly indestructible. These pumps are made in three sizes, having a capacity of from 6 to 20 gallons per minute at 85 r.p.m. They are sold for from $12 to $30 apiece.

* * *

Diem Plumbing Specialties.

Gus A. Diem, of 20 Fulton Street, New York City, is the manufacturer of a complete line of marine hardware especially designed for motor boat use. This line includes toilets, lavatories, of both the stationary and portable type, sinks and marine type bath tubs. One of Mr. Diem's leaders is the Fulton closet which is sold for $22.50, or $31.00 with the new outboard connections and valves patterned by Mr. Diem. It is claimed that these sea-cock connections are much easier to operate than the usual type. The outboard connections themselves are also of an improved type, designed especially for the use of amateurs.

* * *

The "Fire Out" Extinguisher.

The "Fire Out" extinguisher is strongly made of polished brass; the liquid it contains will neither freeze nor deteriorate; it can be placed in any position where there is hazard of fire; and the makers state it is always ready for use without manual operation, as when a fire occurs the location affected is immediately flooded with about 2,000 feet of heavy fire extinguishing gas, sufficient to smother any fire. The device is manufactured by the Inst Lighter Co., Columbus, Ohio.

* * *

Valspar Varnish.

Valentine & Co., of New York, with offices in all the principal cities of the United States, are the makers of the well-known Valspar Varnish. This varnish has long been known by the trade name of "The Varnish That Won't Turn White." The makers guarantee that this varnish will not turn white under the action of salt water and that a boat varnished with Valspar will not need the usual extra coat that has to be put on about the middle of the season. As proof of the superiority of their product the company quote the fact that practically every racing boat in the country and also many of the foreign boats are finished with Valspar.

* * *

Kerosene Gas Producer.

The Kerosene Gas Producer Co. manufacture a device which is intended to be attached to an engine in much the same manner as a muffler. This serves as a vaporizing chamber for kerosene so that the engine can be run on this fuel. It is a well known fact that an engine operated on kerosene is much more economical than one operated on gasoline. The difficulty with kerosene, however, has been that it did not vaporize as readily as gasoline and consequently caused much engine trouble. This producer, heats the kerosene until it will vaporize perfectly.

* * *

Universal Supplies.

The Universal Motor Boat Supply Co., of Atlantic Highlands, N. J., are the distributors of a very complete line of motor boat supplies, including deck fittings, steering gears, engine accessories, bilge pumps, etc. Among their specialties should be mentioned the Pyke Automatic Boat Drainer, a device that operates on the suction principle with a scoop arranged on the underside of the boat with the opening aft, so that when the boat moves forward there will be a suction created in the scoop which will draw the water through a hole in the bottom of the boat out through the scoop. There are check valves fitted to prevent the inrush of water when the boat slows down or stops.

Marburg Bros. Specialties.

The SRO ball bearing, which is imported from Switzerland by Marburg Bros., Inc., of 1786 Broadway, New York City, and which is in general use in Europe, is produced by the oldest ball bearing factory in the world. The ball races are cut out of solid steel bars, assuring highest quality and uniformity. The cage is made from pressed steel electrically welded with steel rivets; perfect alignment and liberal circulation are assured.

The MEA magneto is a radical departure from all the usual horseshoe type. It is ball-shaped and so placed that its own axis coincides with that of the armature. By advancing and retarding this magnet jointly with the timing device the spark is always produced in the most favorable part of the magnetic field independently of the timing.

* * *

Star Ball Thrust Bearings.

The Star Ball Retainer Co., of Lancaster, Pa., make a specialty of thrust bearings for marine purposes. These bearings are of the three-ring type with the balls held in one ring and the other two rings serving as bearing surfaces. The two outer rings have a half-round channel cut in the face in which the balls revolve. All parts of these bearings are made of the best quality material. Further information will be cheerfully sent by the makers.

* * *

Sands Lavatories.

There is a demand for small lavatory on board ship where it can be connected with a pump, or gravity feed from a tank, and A. B. Sands & Son Company, 22-24 Vesey Street, New York, have lately made up two new styles, in the "Oran" flat-back lavatory, made of vitro adamant ware with two cock holes and overflow, has a round front, and measures twelve inches across the back with a ten-inch basin.

Also a corner style, made twelve inches along the side, with a ten-inch basin. This is Sands' "Raneo."

Same style basins are made in vitro adamant ware fourteen inches across the back; also corner lavatory fourteen inches along the sides.

On board vessel it is very important to utilize every available space, and A. B. Sands & Son Company have also prepared a combination writing desk and lavatory.

* * *

Smack's Human Life Preserver.

Smack's life preserver is manufactured by the Human Life Preserver Co., of 341 Libert Street, Long Branch, N. J., who claim that it is designed in such a way that disarrangement, even if the wearer is in an unconscious condition, is absolutely impossible. It is rust-proof and non-corrosve and the weight of the wearer is carried on rivets by means of the under arm straps, which will be observed in illustration. The price is $2.

* * *

Wire Rope and Fittings.

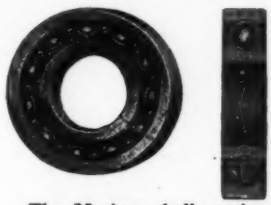
The George B. Carpenter Company, of Chicago, handle a complete line of marine supplies, including deck fittings, interior hardware, and all types of fastenings and tools used in the manufacture of motor boats. One of their specialties is the rigging of sail boats and auxiliaries and they consequently carry a cery complete line of wire rope and fittings for blocks and tackles. This company also handles "Old Colony" rope for which they claim great durability and strength.

* * *

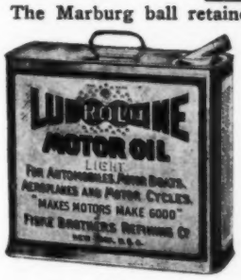
The Morgan Priming Cups.

These priming cups are manufactured by the Morgan Manufacturing Company, of Newport, R. I. They are cylindrical in shape and are opened by twisting a hard fibre head. When open they give a very large opening for either inspection of the cylinder or priming purposes. By twisting the head the cup is closed so that it cannot leak compression under any circumstances. The cups are made in various sizes, from ⅛ to ⅜ inches and cost from 45 cents to $1.50 a piece. They are also made with dust cover.

A 16 ft. Truscott motor boat built of cypress.



The Marburg ball retainer.

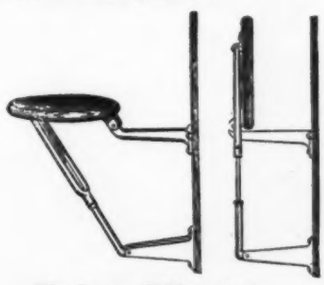


Lubroleine oil.

Sand's lavatories.

Smack's human life preserver.

A Bayonne Monel metal propeller.



The Brown folding stool.

Cypress Lumber.

As the "Wood Eternal" cypress has long held the foremost position. One of the most important points in boat building is the selection of a proper wood for the planking and finishing of the boat. The wood must not only be tough but must resist the rotting action of the water as much as possible. There is special danger of a boat rotting below the water line where it cannot be seen and is not noticed until a disastrous leak has resulted. Cypress probably resists the action of water as well, if not better, than any other wood, and owing to its low price is especially suitable for the construction of boats. As an interior finish for cabins or decks it is very satisfactory inasmuch as it can be obtained with very beautiful grain which, when varnished, finishes with a dark, rich brown color.

* * *

Henke's Bronze.

The Henke Mfg. Co., of New York City, are the manufacturers of a marine bottom paint known as "Henke's Marine Bronze." This paint is put up in a patent container which has two parts. In one part of the container the bronze powder is kept and in the other the liquid. This insures the paint always being in good condition as only enough need be mixed for the immediate needs. It is claimed that this paint contains no banana oil and that a boat painted with it will be as smooth at the end of the season as it was at the beginning, no matter how foul the waters are in which the boat is kept. The paint will dry almost instantly and should be put on over a priming coat of some kind.

* * *

Sammet Cushions.

The Sammet Kapoc Cushions are manufactured by G. W. Sammet & Son Co., of Boston, Mass., and are made up into a regular pillow shape. They are stuffed with prime Java Kapoc and are exceptionally soft and downy. These cushions act as life preservers and each one is stamped by the United States Government, Department of Commerce and Labor, permitting it to be used as a life preserver.

* * *

Bryant & Berry Propellers.

Bryant & Berry Company, W. Atwater St., Detroit, Mich., are manufacturers of both solid and reversible propeller wheels, the former of which has hitherto been their specialty, but recently, owing to numerous requests, they have decided to supply a speed propeller of reversible type. These are constructed upon similar principles to the original form and are guaranteed weed cutters. They are made from high-grade bronze, are guaranteed to be perfectly balanced and to reduce vibration to a minimum.

* * *

Monel Metal Propellers.

The Bayonne Casting Company, of Bayonne, N. J., are the manufacturers of motor boat and steam yacht propellers which are cast from Monel metal. This metal, which is very similar to nickel in looks, takes a very high polish and does not corrode from the action of salt water. Cast Monel metal has a tensile strength of 70,000 pounds to the square inch and can thus be used as a substitute for either steel or the harder bronzes for use in salt water. The makers claim that owing to the extreme smoothness of propellers made from this metal the friction is reduced and greater speed can be obtained. This metal is also used in the manufacture of deck fittings as it is not necessary to polish it as often as brass or nickel.

* * *

Folding Stools for Boat Use.

The Brown Folding Stool Company, of Everett, Mass., are the manufacturers of a folding stool which can be fastened to the side of the cockpit and when not in use folded up out of the way. When open the stools form a strong and comfortable seat and when closed take up a space only 2½ inches deep. This stool folds automatically as soon as the pressure upon it is relieved. This stool is made in either light or dark oak, light or dark mahogany, or white enamel or gold.

Havoline Oil in Convenient Case.

The Indian Refining Co., 17 Battery Place, New York City, are now packing Havoline cylinder oil in handy cases of two five-gallon cans. The latter are the regular export type and are packed in the new way, with the idea of cutting down container cost to a minimum; in fact, the company are able to supply the new line to dealers and consumers at very little over the barrel price.

* * *

Titan Wire Rope.

The Driver-Harris Wire Co., of Harrison, N. J., specialists in wire rope products, are making a rope designed especially for motor boat use which they call their Titan brand of wire rope. This rope is made from either phosphor bronze or Monel metal. The rope is exceptionally strong, durable and non-corroding. The Monel metal rope in particular is very desirable for boats that have their steering gear exposed. This metal looks almost like silver and does not need a frequent polishing. In addition it is stronger than the bronze rope, and naturally presents a very beautiful appearance when used on boats equipped with Monel metal fittings.

* * *

Sands Bow Closet.

A. B. Sands & Son Company, 22-24 Vesey Street, New York City, have lately perfected a Closet, known as the "Bow" Closet, plate S-2050. This fixture has been carefully designed and built with a view of putting it far up into the bow of motor boats, utilizing what has very often been waste space. This fixture is not expensive, and certainly will be very popular with motor boat owners, as it can be placed in the bow of a boat and partitioned off out of sight, or fitted under a seat.

* * *

Polaris Compass and Binnacles.

The Marine Compass Co., of Bryantville, Mass., specialize on liquid compasses particularly adapted for power boat use, dial vibration being entirely eliminated and not appreciably disturbed by rolling or pitching. Detail work is excellently carried out and general design is all that could be wished for. Our illustration shows the Perfect electric light attachment which in addition to insuring the best possible light is sufficiently subdued to obviate the possibility of eye strain, which is so often the direct cause of errors in navigation.

* * *

McClellan Top and Spray Hoods.

A line of automobile type tops and spray hoods is manufactured by Chas. P. McClellan, of Fall River, Mass. The auto tops have a patented frame which make it possible to raise or lower the top without detaching any part of it. They can be raised and lowered by one man without assistance and are therefore much more desirable than some of the tops that require two men to raise and lower them. The spray hoods are also of simplified construction and Mr. McClellan states that his hoods are in use upon all the boats of United States Life Saving Service. A complete catalogue of both hoods and tops will be sent upon request.

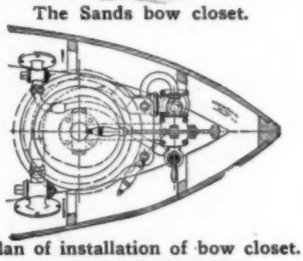
* * *

B. Morgan's Specialties.

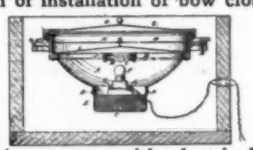
The Utility tool, manufactured by B. Morgan, of Newport, R. I. plays as may be observed on reference of our cut many parts. It can be used as a drill jig, a hand vise, a valve lifter, a spring stretcher or compressor, a bench vise, or in fact as one of those handy tools which when you get them are found to be indispensable. There are no loose parts and the price is $2. We also illustrate Morgan's patent priming cup, the new type which is made with scalloped edge and insulating ring (thus preventing burnt fingers) is ready for immediate delivery. They are guaranteed against leaking, sticking or seizing and the prices vary from 45 cents to $1.50, according to type, size, and finish.

Havoline oil in a new case.

The Sands bow closet.



Plan of installation of bow closet.



Polaris compass with electric light attachment.

An E. J. Willis compass and binnacle.

Morgan's utility tool.

A Kenyon boat cushion.

The Amnelius propeller.

Koven Tanks.

L. O. Koven & Bros. are the makers of a line of gasoline, water, and air tanks for marine use. These tanks are all of the range boiler type made of a very heavy grade of galvanized iron heavily riveted and then sweated so that they are proof against leaks. These tanks are all made so that they will stand air pressure when a gravity feed is not used.

* * *

Kuhls' Marine Paint.

H. B. Fred Kuhls, of Brooklyn, New York, is the manufacturer of several varieties of marine paints and compositions. Among his specialties may be mentioned an elastic seam composition for use in either hull or deck seams. This composition will remain soft under all conditions and will not crack out in the seams when the planks shrink. His elastic paints are also very adaptable for motor boat use as it is claimed that the paint will not crack or check even though the planks and other timbers work slightly. This elastic paint is made in a flat white, a gloss white, a bright green copper paint, a bright red copper, and a bright green boot topping.

* * *

Monel Metal Propellers.

The Biddle Hardware Co., of Philadelphia, Pa., are the manufacturers of propellers and marine hardware, from Monel metal. This metal is much stronger than any of the bronzes. It is not corrodable in salt water and takes a very high polish. This polish is permanent and causes the metal to resemble highly polished silver. Propellers made from this metal are not only stronger than those made from bronze, but owing to their high polish, it is claimed that they cause an increase in speed owing to decreased resistance.

* * *

The Prize Winner Binnacle and Compass.

The Prize Winner binnacle and compass has been introduced by E. J. Willis Co. 85 Chambers Street, New York City. To fill the demand for a neat and small liquid compass fitted in a small binnacle of detachable type and suitable for use in cabin cruisers and open boats. The general appearance of the fitting will be apparent from our illustration. The compass dial glass is inserted on a bevel and is perfectly free from spray and rain. The sides of the compass card is 2 ins., while the binnacle is 3 ins. x 3½ ins.

* * *

Dirigo Compasses.

Eugene M. Sherman, Bellevue, Post Office, Seattle, Wash., is the manufacturer of a line of compasses and binnacles for motor boats and yacht use. These devices are made in many sizes so as to be adaptable to even the smallest type of cruising boats. Mr. Sherman states that he will refund money on any of his devices that are not satisfactory and he points with pride to the fact that the "Sea Bird" on her trip across the Atlantic and also the "Detroit" were both equipped with Dirigo compasses which is a good recommendation for their reliability.

* * *

Pyrene Extinguishers.

The Pyrene Extinguisher, which is designed especially for motor boat and automobile use, is manufactured by the Pyrene Manufacturing Company, New York City. There are many claims made for this extinguisher the chief of which is that the liquid within the extinguisher forms a very heavy gas immediately upon striking the air, and as this gas is heavier than air, it serves to smother the fire. This, of course, is especially desirous where gasoline fires are a danger. The liquid is also a non-conductor and may be played upon electric wiring without the operator feeling shock.

* * *

Amnelius Propeller.

Theodore Amnelius, South Framingham, Mass., claims for the propeller which we illustrate on this page that, owing to its general design, the otherwise vital question of the effect of centrifugal force can be totally ignored as the tendency with the Amnelius wheel is to, in a sense, restrain the outward motion communicated to the water by more normal types, resulting in increased power and speed.

Columbian Propellers Etc.

The Columbian Brass Foundry, of Freeport, L. I., are the makers of the well-known Columbian propellers which are used on some of the fastest, as well as some of the largest motor boats in the world. An illustration of this is the fact that Baby Reliance II, the world-beating 20-footer, and the Allegro, the largest motor yacht afloat, both carry Columbians. Aside from the complete line of bronze propellers, the foundry also manufactures many bronze accessories. Among these latter things should be mentioned the Columbian Universal Strut. These struts can be used on any size of boat no matter what their shaft angle may be, as the universal bearing is self-aligning. The shaft bearing is fitted with anti-friction bushings which may be easily replaced when worn. There is space for sufficient grease to be packed around the bearing to lubricate the shaft for the season. The Columbian line of Manganese bronze rudders has been enlarged this year.

* * *

Automobile Steering Wheels.

The Hall-Gibson Company, of Rochester, N. Y., are putting out a line of auto steerers for 1913 that will include all types and styles of steerers. Their latest wheel is of a new type with the drum, around which the tiller rope is wound, scored, so that the ropes cannot become tangled or bind against each other. The control levers operate fore and aft instead of athwartships, a feature which simplifies installation immensely as there is no need for a number of bell cranks with this improvement.

* * *

Bulb-Shank Mooring Anchor.

The Fairhaven Iron Foundry Co., of Fairhaven, Mass., are manufacturers of the Fairhaven bulb-shank mooring anchor, which is designed to prevent the mooring cable encountering sudden strains when thrown or lifted in a seaway. The bulb weighs 25 per cent. of the mushroom and is at the end of a long shank, forming a buffer between the mooring proper and the boat. As soon as the latter falls from the crest of a sea the bulb drops and the action is repeated on following seas.

* * *

Pneumatic Yacht Mattress.

Pneumatic Mfg. Co., 526 17th Street, Brooklyn, N. Y., are manufacturers of pneumatic yacht mattresses which can be used in cases of emergency as life rafts or a float while bathing, while they have the advantage of occupying very little space when deflated and stowed away. Standard sizes are 25 x 75 ins. and 30 x 75, costing $20 and $23 respectively. They can be made to fit a berth or seat of any shape and can be easily repaired should they meet with an accident.

* * *

Commercial Acetylene.

The Commercial Acetylene Co., of New York City, manufactures an acetylene gas system for use in motor boats or sailing yachts. This equipment consists of a steel cylinder in which the acetylene is stored by an absorption process. Small tubing leads from the cylinder to the lighting fixtures. The length of time a cylinder will supply depends upon the amount of light used, but under average conditions, a small cylinder will supply light for very nearly an entire season.

* * *

Yacht Fixtures.

The Goblet-Dolan Co., of New York City, are the manufacturers of specialties in marine plumbing. Their line includes toilets, folding and stationary lavatories, galleys, sinks and various fittings and pumps for use in the toilet and galleys of motor boats and yachts. Their toilets are equipped with metal valves which they claim are far superior to the old-fashioned leather valve. Their toilets range from a simple above-the-water line fixture to the very pretentious affairs for use in large yachts. The line of bath tubs they carry with a shower bath attachment connected to a large easily-operated pump is very complete. They also carry a line of galvanized gasoline and water tanks holding from 5 to 260 gallons.

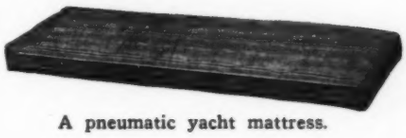
The Columbian Universal strut.

Columbian manganese bronze rudder outfit.

The Hall-Gibson steerer.

Sand's port light.

Bulb-Shank mooring anchor.



A pneumatic yacht mattress.

The Sand's ventilator.

A Janney-Steinmetz seamless tank.

Kyanize Spar Varnish.

The Boston Varnish Co., of Everett Station, Boston, Mass., are the makers of the well known Kyanize Spar Varnish. This varnish has been used in large quantities by the United States Navy. It is claimed that this varnish will not turn white and will retain its luster even though exposed to salt air for a long period. The varnish comes in cans of various sizes from 1 pint upward.

* * *

Spray Hoods.

Bottger Bros., of City Island, New York City, have long been manufacturing boat sails, awnings and spray hoods for marine work. They make a spray hood of the sliding type with a separate flap on the sides that can be lifted, so as to permit ventilating when the top of the hood must be up. The firm also make a specialty of sails for auxiliary yachts and motor boats.

* * *

Bridgeport Bronze.

Bridgeport Bronze for use on the under bodies of motor boats and sailing craft is manufactured by the Bridgeport Marine Paint Co., of Bridgeport, Conn. It is claimed for this paint that it is not necessary to haul a boat during the summer or clean off the bottom in any way, owing the the fact that barnacles and other marine growth will not become attached to any surface covered with it.

* * *

Port Lights.

The A. B. Sands & Son Company, 22-24 Vesey Street, New York City, make a very complete line of Port Lights, from three-inch to fifteen-inch, with single, double thumbscrews, with and without storm shutters, for steel or wood hulls, and with expansion sleeves, with and without collars.

* * *

Thermo Gasket.

F. W. Battershall & Co., of Albany, N. Y., are the manufacturers of the device which is designed to be inserted between the carbureter and inlet valves of either 2 or 4 cycle gasoline engines. It is a brass gasket less than ½ inch thick and is bolted between the flanges of the carbureter and the intake pipe, it is heated by exhaust gases and serves to heat the mixture before it reaches the cylinders, and it also heats the carbureter and assists that instrument to properly vaporize the gasoline.

* * *

The Janney-Steinmetz Tank.

The advantages of the seamless type of gasoline tank are so obvious as to be apparent to anybody and in particular their worth cannot be overestimated when used in power boat construction. Janney, Steinmetz & Co., of Fourth and Market Streets, Philadelphia, and Hudson Terminal Building, New York, specialize in gasoline tanks constructed of cold drawn seamless steel, tinned and tested, and guaranteed not to leak. Tanks of this type were used by the 35-foot motor boat Detroit on her memorable voyage across the Atlantic.

* * *

Durkee's Kleen-eze.

Durkee's Kleen-eze is manufactured by C. D. Durkee & Co., of 2 South Street, New York City, and is intended to take the place of a number of different cleaners for various metals and other substances, it being claimed that Kleen-eze is suitable for cleaning varnished or painted surfaces, porcelain or enamel, and that it polishes brass, copper, tin, silver, etc. It will not scratch or harm any surface, contains nothing of an injurious chemical or other nature, is economical in cost, and finally is a great labor saver.

* * *

The A. B. C. Life Raft.

The Welin Marine Equipment Company, of Long Island City, are the manufacturers of this life raft which is intended for use on motor boats and yachts. The raft is oval in shape, measuring 5 feet in length by 2' 6" in width. In section it is 6 inches in diameter and weighs complete only 40 pounds. The ring part of the raft is made from solid wood of a sort that is found in South America and which is much lighter than cork and as strong as spruce.

Monarch Carbureters.

Monarch Carbureters and vaporizers are manufactured by the Monarch Valve Company, of Brooklyn, N. Y., who also manufacture check valves, stuffing boxes and stern bearings. The Monarch standard carbureter differs slightly from last year's model in that it has an improved form of needle valve and lever connecting it with the float. The needle valve extends through the cap and is thus firmly guided at the top and bottom. The float lever is a hard brass stamping and operates the valve at the slightest change of level in the float chamber. This, it is claimed, absolutely prevents flooding. This carbureter is made in both horizontal and vertical types and can be fitted with a Monarch Check Valve for use with two-port engines. The Monarch Special Carbureter is made with a special shutter on the air intake which can be controlled by a small lever so that the supply of air can be regulated to suit the requirements of the engine.

* * *

Triplex Carbureter Attachment.

The Bremer-Wilson Mfg. Co., of Chicago, Ill., are the manufacturers of the Triplex Carbureter attachment. The Triplex is a device placed between the manifold and the carbureter to break up the mixture. No matter how imperfectly the carbureter does its work it is claimed for the Triplex attachment that it will complete the work of the carbureter and equalize the mixture, producing an explosive gas of even uniform quality that will burn clean to the last atom. It is claimed that the device prevents back-firing and saves 25% of the fuel.

* * *

The "Ereful" Whistle.

The Ereful whistle is manufactured by Wilcox, Crittenden & Co., Inc., of Middletown, Conn. It is well made of seamless brass tubing, highly polished and rust-proof, and the plunger has been ingeniously utilized to produce the "scream." It can be placed in various positions in the boat in order to economize space and has been passed as efficient by the Customs authorities.

* * *

The Monoplex Marine Horn.

This horn, which is manufactured by the Atwater Kent Manufacturing Works, operates from the ignition circuit and gives a clear loud tone which complies with the government requirements. The horn is mounted on a swivel base and is fitted with a handle so that it may be turned in any direction. It is manufactured in two types, the first model having a long projector and selling for $15 and the second having a short projector and selling for $12.

* * *

Aermore Exhaust Horn.

The Aermore Manufacturing Co., of Chicago, Ill., are the makers of what they call Musical Signal. This device is constructed of polished brass and is designed to be fitted into the exhaust pipe at any convenient place. Cut-out lever when opened by either foot or hand causes the signal to operate. The tone is very clear and has good carrying qualities. The makers claim that the device will not clog up or require any attention whatsoever.

* * *

Tiebout Specialties.

The W. & J. Tiebout Marine Supply firm are still making a specialty of motor boat hardware and have two leaders with which they have had great success during the past season. The first is the "Star" air pump and consists of a small single-cylinder compressor which can be run from the tail-shaft direct by the use of a split eccentric and a hinge bearing. The compressor stores air in a tank from where it is taken for the whistle. The compressor can be switched on or off by a single movement of a lever. This lever can be operated by foot pressure or hand from any part of the boat. Another one of their leaders is a power bilge pump which is mounted on the floor of the boat and operated by a friction wheel being pressed against the fly-wheel. This little device has a capacity of five gallons per minute. The price is $8.

The Dirigo Whistle Outfit.

This whistle outfit, which consists of a double-cylinder horizontal opposed air pump and a galvanized storage tank with gauge and whistle, is manufactured and sold by Walter Coleman & Sons, of Providence, R. I. The compressor can be furnished with either friction belt or sprocket drive, and has a lever that serves to throw the power on or off. This little compressor requires only 1/10-h.p. to operate, but has a capacity of 3,000 cubic inches of air. The compressor is arranged with a valve so that it is impossible to run the pressure in the tank above the safety point. The whistle is of the triple-chime type with pleasing tone and is not affected by water or dampness. It can be successfully operated on less than one-pound air pressure. The complete outfit consists of a galvanized air tank, the necessary check valve, a polished brass deck plate, 12 feet of special air hose with connections, a polished brass air gauge and full instructions. The price is $22.50.

The Manhattan electric horn.

The Ereful whistle.

The Dirgio whistle outfit.

Caco Whistles.

Gleason-Peters Air Pump Company, Brooklyn, N. Y. This company makes a line of air whistles running from the ordinary hand pump whistle, up to the more complicated affairs for large vessels. They also make an adjustable lever whistle which has a special adjustment, allowing the whistle to be blown with a uniform volume of tone without any waste of air. A new air whistle valve operating by a push button instead of by the old-fashioned curved lever is another novelty. Their whistles are made in both single and double tone, in 1½ and 2-inch sizes.

* * *

Gray-Hawley Fittings.

The Gray-Hawley Manufacturing Co., Detroit, Mich., are the manufacturers of a line of motor boat fittings, including whistle outfits, spark, throttle and reverse controls, gasoline filters, mufflers, fog bells, combination flag poles and stern light brackets, etc. Among their leaders may be mentioned the Gray muffler, which is divided into four compartments or expansion chambers arranged so that the gases form their own cushions and no baffle plates are needed. These mufflers are constructed of sheet steel, asbestos lined and are fitted with safety valve and cut-out. The Gray gasoline filter is composed of a brass case into which the gasoline flows at the bottom and from which it leaves at the top, after passing through four different screens. A fog bell with a patented clapper so arranged that it will not ring when the boat is in a seaway, and will ring only when a cord is pulled, is another one of this firm's valuable accessories.

* * *

Manhattan Electrical Supply Company.

The Manhattan Electrical Supply Company of 17 Park Place, New York City, manufacturers of the celebrated Red Seal dry battery which now has been adopted as standard by many many motor boat men, are also offering an excellent type of electrical whistle. They claim that this is much superior to some forms of spent gas whistles and requires no additional electrical installation as the ignition batteries are used as a source of current for the whistle.

* * *

The Reacto Horn.

The Holtzer-Cabot Electric Company, of Brookline, Mass. are the makers of the Reacto Horn, which is specially designed for use on motor boats. The horn will operate on any six-volt ignition circuit, and is adjusted so that it can be used on batteries of very low voltage. The horn is finished in three different styles, the first being in nickel and black enamel, the second in polished brass, and the third in a plain finish. The price of this horn is $10, or $11.50 with the push button and wiring complete. Another horn is manufactured especially for marine use by this company, and has been approved by the United States Government for use as emergency signal on the battleships. The price of the device is $16.

* * *

A Spent Gas Whistle.

The H. E. Boucher Manufacturing Company, of 20 Fulton Street, N. Y., are the distributors of the Watres and Tec whistles. These whistles are of similar type and depend for their operation upon spent gas which is taken from the cylinder head in very small quantities through an automatic device. The gas is stored in a tank from where it is taken for the whistle. The device is perfectly automatic in action as the valve in the cylinder head closes as soon as the tank is full and opens again when the pressure has fallen. The Tec whistle sells complete for $12. The Watres whistle which is slightly larger and more powerful than the Tec, costs from $17.50 to $50, depending upon the size and power.

* * *

Small Air Compressors.

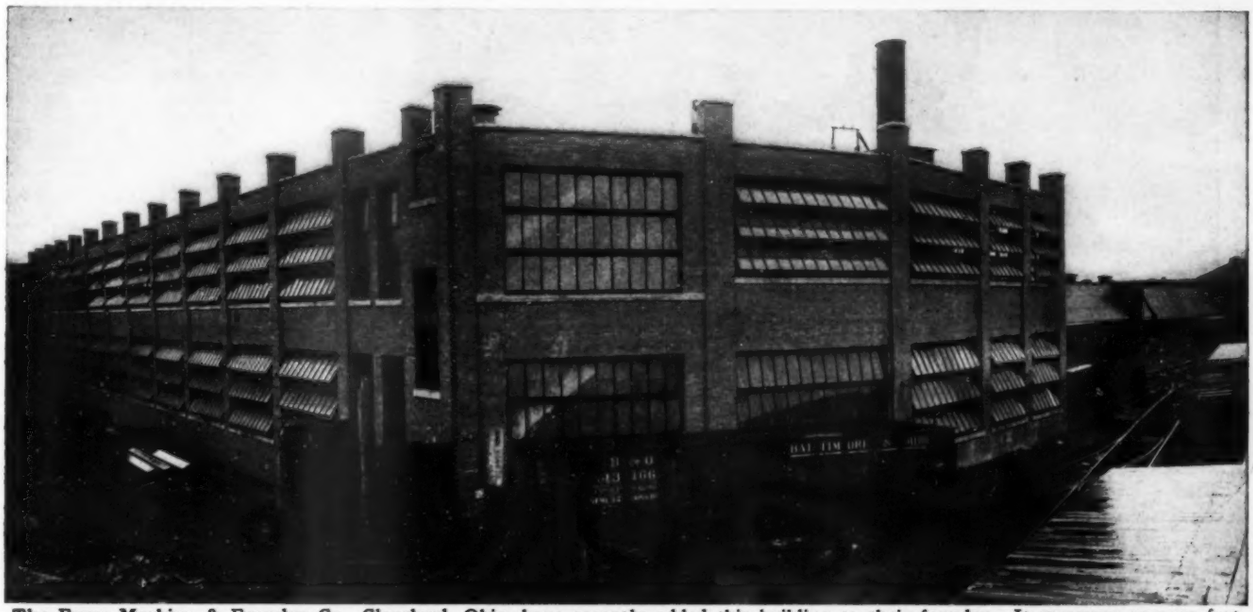
The Brunner Manufacturing Company, of Utica, N. Y., are the manufacturers of an extensive line of air compressors, tanks and fittings for whistles. Their line of compressors runs from a single-cylinder 1½-inch pump, which is driven by a belt from the fly-wheel of the engine, up to a 4-cylinder outfit that gives 1,130 cubic inches of air at 425 revolutions per minute. There are also double-cylinder types and also several models of vertical compressors. The prices of the compressors range from $11.50 up to $90. They also sell complete whistle outfits which include the tank and whistles in addition to the compressors. This type of outfit costs from $19.50 up.

* * *

Durkee's Marine Hardware.

Messrs. C. D. Durkee & Company, 2 and 3 South Street, New York City, long known to the motor boating fraternity for their successful results in supplying every demand that the trade has required, have even added facilities for meeting the 1913 demands. The quality of the line of general hardware which Durkee & Company always carry on hand in their large store on South Street, is a high water mark which all dealers aim to attain. Their outfits of equipment as required by law for the various classes of motor boats, are among their specialities as is also their line of hardware for use in building and entirely fitting out a new boat.

YARD AND SHOP



The Ferro Machine & Foundry Co., Cleveland, Ohio, have recently added this building to their foundry. It measures 97 x 307 feet, is two stories and basement high, and has a floor area of 69,000 square feet.

New Gray Model.

Of special interest to the owners of large yachts, cruisers and work boats, is the 1912 announcement of the Gray Motor Company featuring their 36 h.p. 3 cylinder Model "T."

The illustration shows this power plant with Paragon Reverse Gear attached to the extended base, Bosch High Tension Magneto, and the 1913 rear steering equipment. This starting device on 36 h.p. Gray is, on account of its very simplicity, one of its most notable features. It gives the man who has his boat equipped with one of these plants the advantage of having a motor that starts and operates with the same simplicity and ease as the high grade automobile motor.

Some of the other notable features of the model are its methods of lubrication and its accessibility.

The Model "T" is a 3 type engine in one, which accounts for its great adaptability to different kinds of service. Regularly furnished it is a combination two and three port motor, yet it can be run separately as a two port, as a three port, or as a combination of the two. Ever since the Gray Model "T" was brought out, three years ago, it has been designed to lubricate through the gasoline. A system of mixing lubricating oil with the gasoline before the same is put in the tank has been so satisfactory in every way, that every engine in the Gray line during the past season was designed for this method of lubrication, and in 1913 motors a similar practice will be followed.

Every feature leading to accessibility was employed in designing the Gray Model "T." There are hand hole plates on either side of the crank case held with cap crews. By removing these plates, loosening up the connecting rod, and removing the cylinder head, the piston and connecting rod can be lifted through the top, it is therefore not necessary to take off the cylinder to get at piston or replace piston ring.

The exhaust and intake manifolds are held in position by dowel pins and clamps. Any part of a two or three cylinder engine is a unit and can be removed or examined without disturbing the rest of the engine.

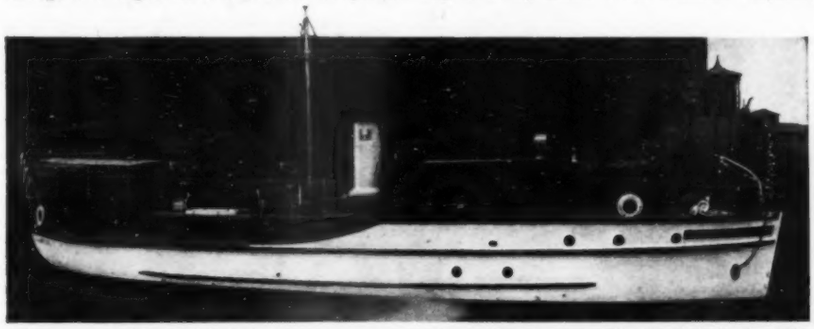
The nickel steel valves on the Model "T" engine can be removed without disturbing the intake manifold. The valve works in a bronze cage that is screwed into the body of the manifold.

All Gray Model "T" motors are regularly furnished with standard gasoline equipment. They are, however, designed to receive the patented Gray Gasoline Injector and can be converted into a kerosene motor at any time the operator wishes.

Descriptive literature will be furnished on request by the Gray Motor Co., Detroit, Mich.

The "Shipmate" Trade-Mark.

The Stamford Foundry Company, of Stamford, Conn., have obtained an injunction of the District Court restraining the Thatcher Furnace Co. from making use in any manner of the trademark "Shipmate," same being the exclusive property of the Stamford Foundry Co.

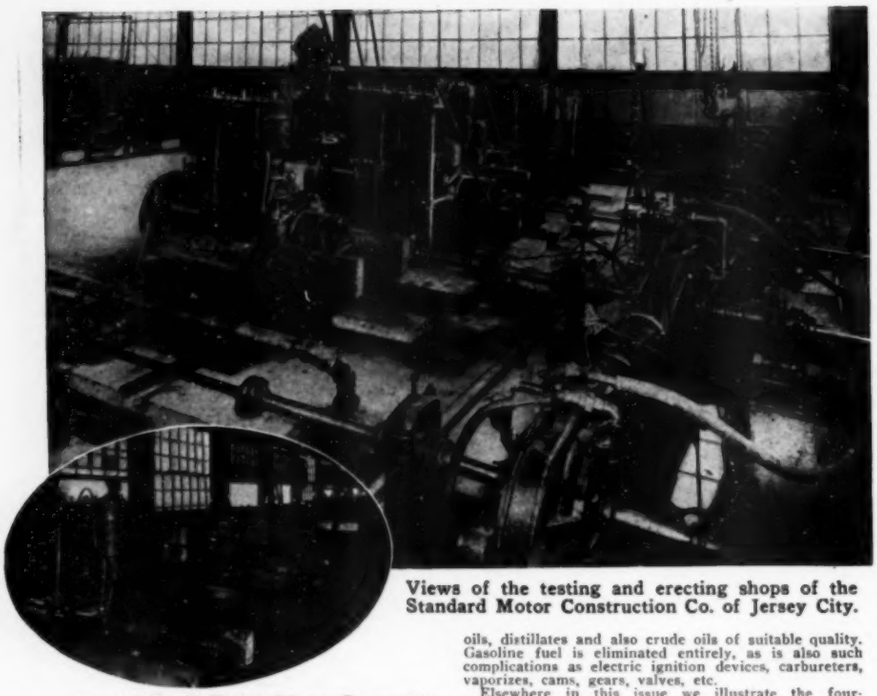


The seventy-foot United States Government boat, "Capt. J. J. Meyler," built by The Matthews Boat Co., Port Clinton, O., and powered by two 36 H. P. "Buffalo" heavy-duty engines, manufactured by the Buffalo Gasoline Motor Co., Buffalo, N. Y.

Frisbie Motors.

The Frisbie motor is one of the foremost examples of the valve in the head type of motor which system embodies as its most important feature the location of valves in removable cages placed directly above the piston. It is claimed by those who have studied the relative advantages of various systems that this design gives a great deal more power than is possible with any other arrangement, and that the resulting simplicity is something which is of inestimable value from a practical standpoint. In the Frisbie ease of operation is combined with reliability and simplicity to a remarkable degree. As in the Frisbie motor the gas is admitted directly above the piston the maximum amount of power is developed; there are no side passages to develop heat or consume power needlessly. It may be noted that the valve cage contains both the valve and the valve seat and these can be removed for motor inspection or for grinding, cleaning, or inspection, in a moment's time. Frisbie motors are made in numerous models, ranging from 3 to 75 H.P., both for commercial boats and for cruising purposes. A water jacketed air compressor of neat and efficient design is one of the recent additions to the Frisbie motor; this operates off the main shaft and is firmly and conveniently mounted as shown in our illustration. The water circulation is excellent and will remain cool under all conditions and the compressor is fitted with a relief cock which removes the load from the pump, thus compressing the air only when desired. We also illustrate Delphia II, engined with a six cylinder 44.29 H.P. Frisbie motor and stated to be the fastest boat for her size and type in the world.

"Delphia II," a 19-foot boat, engined with a Frisbie six-cylinder motor 4¾ x 5 inch, manufactured by the Frisbie Motor Co., Middletown, Conn. Horsepower, 44.29.



Views of the testing and erecting shops of the Standard Motor Construction Co. of Jersey City.

The Mietz & Weiss Direct Reversible Marine Oil Engine.

For the past six months there has been much said about the evolution of the internal combustion motor into a type known as the Diesel engine, using the heavy, cheap fuels, which type has particularly been developed in Europe. The American non-technical press has taken the information as referring substantially to a European achievement, and has brought out many interesting features of different lines of development of this type of motor.

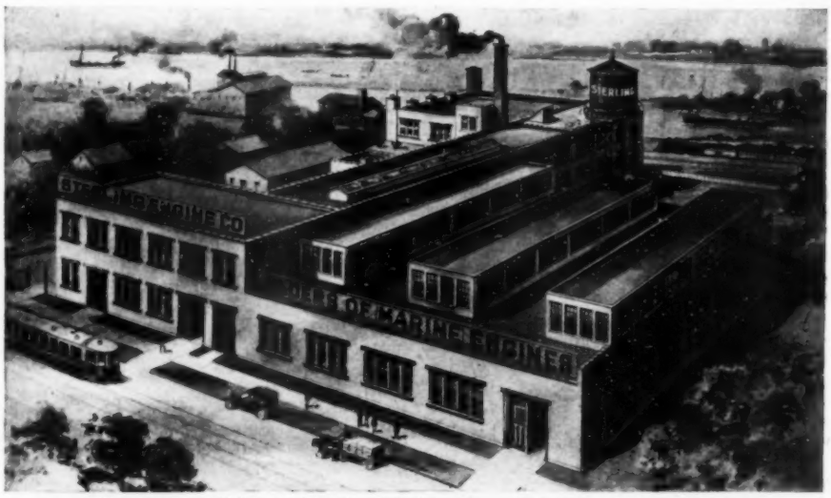
The Mietz & Weiss Oil Engine, although not directly based on the Diesel principle, has long been known in the United States as the pioneer American oil engine, now widely used in foreign countries and in most of them directly copied by manufacturers, and sold in great quantities in competition with the original M. & W. Engine.

The principal difference between the Diesel and the Mietz & Weiss Engine, is the working pressure; the Diesel type engine working with a pressure of 500 lbs. in the cylinder and the injection pressure further necessary of 1,000 lbs. per square inch, where the Mietz & Weiss engine has a pressure of about 200 lbs. in the cylinder, and requires no further higher pressure for injecting the oil. The simplicity of the American engine as compared with the Diesel is so marked and so well established in the many installations where the M. & W. engines have been introduced, that it is merely a question now of the price and quantity of fuel consumed in each unit as to which is the most favorable system to adopt for the power used. There is besides a marked difference in the durability of the engines operating with such high pressures, in favor of the M. & W. engine. This is also shown by the many favorable reports of installations in all lines of industry.

In the marine field there has been developed and put on the market the M. & W. Direct Reversible Marine Oil Engine, in which the reversing gear is eliminated, and the engine is started, reversed and manipulated like a steam engine, only in this case air is used in place of steam.

The engines are operated by common kerosene, fuel, oils, distillates and also crude oils of suitable quality. Gasoline fuel is eliminated entirely, as is also such complications as electric ignition devices, carbureters, vaporizes, cams, gears, valves, etc.

Elsewhere in this issue we illustrate the four-cylinder engine.



The recent addition to Sterling Engine Company's plant at Buffalo, N. Y.

Sterling Successes.

The list of the principal races won by Sterling powered boats is of such formidable length that this page would not suffice to contain it. Starting with the St. Augustine Club races early in April, and ending with Buffalo Club Regatta in September, there is an unbroken record of successes. Among so many important events it is not easy to make distinctions, but the New York to Block Island Race over 100 nautical miles which was won by a margin of 3½ hours by "Thistle," owned by J. H. Wallace, the New York to Albany and return race, won by the same boat, by an even greater margin, and, last but not least, the various performances of the Reliance Babies, Ankle-Deep, and P.D.Q. 2nd, are of such recent occurrence that they are still fresh in the reader's memories.

The Use of Kerosene on Roberts' Motors.

In the November issue of MoToR BoatingG appeared an article on the use of gasoline, kerosene and crude oil. This article covered the subject in a general way, and outlined the great possibilities in the use of the heavier fuels in the ordinary marine motors.

There has always been a demand for a motor that would operate on kerosene or crude oil. This has been especially the case in foreign countries where the price of gasoline has always been extremely high. Recent advances in the price of gasoline has led many manufacturers to go into this matter very extensively, a great deal of experimenting has been done, and several different kinds of devices have been tried. The result of the investigations made by the Roberts Motor Company is of general interest.

The Roberts marine motors consist of three distinct types, all equipped with Kingston carburetors. These motors are of the two cycle type built in the following sizes:

Model O	3½ x 3	70 lbs. compression
Model M	4 x 3½	70 lbs. compression
Model P	4½ x 5	84 lbs. compression

The Model O and Model M engines will handle kerosene with no changes in equipment whatever. The inclosed type of carburetor can be used to advantage, but the standard type will do the work, it is only necessary to open the needle valve one-fourth turn upon shifting over to the use of the heavier fuel.

The Model O motors will start readily on kerosene, as it is only necessary to prime the motor on gasoline to get the initial explosions. With the Model M engines an extra gasoline tank must be furnished. The motors must first be run on gasoline until they become warm, after which the change can be made to the heavier fuel. It is also advisable to cut down the supply of cold water to the jackets, as this helps vaporize the mixture. On these motors and on the smaller ones a hot air connection to the carburetor is not essential in warm climates, but should be used in cold countries.

Kerosene operation with the Model P engines is not quite so simple, as these engines are larger and of higher compression, and special provision should be made to avoid pounding and carbon deposits. The enclosed type of carburetor must be used and there must be a hot air connection running from the carburetor intake to a point on the exhaust pipe. An auxiliary gasoline tank must be provided for starting, and a tank holding fresh water, connected to a small water carburetor placed on the main carburetor.

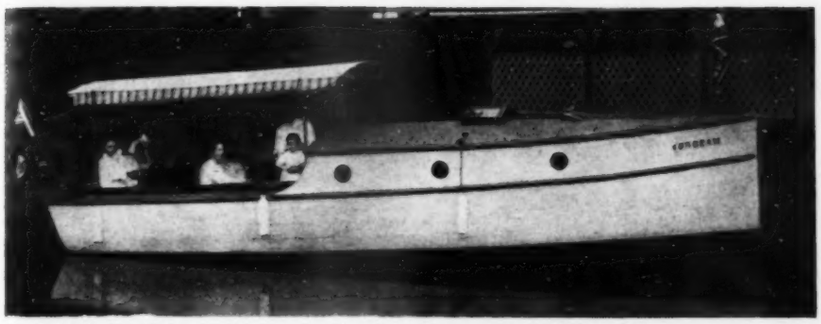
The water enters the motor with the fuel in a fine spray, is broken up by the heat of the motor and the explosion into its component gases, prevents carbonization and pre-ignition and furnishes a proportional amount of the power developed by the motor. The water is of advantage both when running on kerosene and on gasoline; more particularly on kerosene to prevent carbonization and pre-ignition, on gasoline to economize the fuel. The water is used in proportion of three pints of water to eight pints of either fuel.

The power developed when using kerosene for fuel is the same as when gasoline is used, fuel consumption is also the same. It is true that the needle valve must be further opened for the heavier fuel, as the kerosene flows less readily.

The oiling system used on the Roberts and many other two cycle engines consists of merely mixing the lubricating oil with the fuel in the proportion of one and one-half pints of medium oil to every five gallons of fuel. This system is employed whether using kerosene or gasoline.

The control of all models seems perfect for both high and low speed. A speed of 1100 r.p.m. can be maintained with no trouble and there is no apparent carbonization even after a long run.

Fish cannery tender "W. T. Muir." Used for carrying salmon from traps to canneries. Designed by Lee & Brinton, Seattle, and owned by the Alaska Pacific Fisheries. Length 90 feet, engined with a 150 H. P. San Francisco Standard engine.



L. C. Julien's 26-foot cruiser powered with Caille motor and fitted with new type reversible propeller, manufactured by Bryant & Berry, Detroit.

"Standard" Methods.

Probably few of our readers fully appreciate the bearing upon results there is in the way their engine is manufactured.

It is said that by the improved methods of manufacture of to-day over those of Robert Fulton's time, the "Clermont's" engine built in 1909, an exact duplicate of the original, developed over 5 h.p. more than the original.

The methods used in the building of a modern gasoline engine should be of general interest. To give to the buyer of an engine the greatest value the manufacturer must be able to build in the best possible way most efficiently and economically.

Three things are essential to this—the best grade of material in construction, the highest efficiency in workmanship, and modern methods of working. The inventor or manufacturer may have good ideas, but without the aid of modern machinery and efficient workmanship he cannot produce these ideas as a finished product to a state of perfection. Manufacturers in whose shops old time tools are in operation and bygone methods of production still in vogue must realize that they are handicapped in the field of competition. It is the manufacturers who have awakened to the fact that up-to-date machinery, well paid and efficient workmen, and modern methods of working are the only means whereby they can manufacture and meet all competition successfully, who are giving the greatest value to their customers.

The Standard Motor Construction Company of New Jersey, manufacturers of marine gasoline engines ranging in size from 10 to 1500 horse power, has successfully followed these methods in the building of their machines, which has resulted in obtaining for them a large number of satisfied customers in every portion of the world.

On account of the company's continued growth, it has been found necessary to make considerable additions to its present plant. These consist of a basement and one-story steel and concrete building 80 feet by 160 feet, with a floor space of 25,600 square feet, equipped with modern machinery and fixtures, and also cranes and trollies for transferring the work to different parts of the shop. The heating, lighting and ventilating systems are of the improved type, affording the employee the needed comforts to produce good work.

A new steel and concrete forge shop and a new test house of similar construction have been added to the list of new buildings. The latter will allow the testing of twelve engines at a time. Each and every engine is given a thorough test on the well-known Standard Testing Brake before they are permitted to leave the factory.

The company has tried and thoroughly tested out with very satisfactory results the bonus plan of pay which, briefly, is a plan whereby the mechanic who is willing to produce more and better work is given extra compensation as a reward for his extra efforts. Through the methods of this system the company has been able to obtain and maintain a force of well-paid, skilled and efficient mechanics in addition to that spirit of co-operation so essential in manufacturing a high class article.

All the more important parts of the engine are made by the use of special fixtures, thereby insuring accurate workmanship and perfect interchangeability. Among the many special and adaptable fixtures for machining the parts are the fixtures for machining the cam shaft bearings. These bearings are made of high grade phosphor bronze.

It is by the systematic using of such modern methods that the Standard engine can be made of such excellent quality and still compete with other engines. The illustrations we reproduce will serve to illustrate the very complete nature of the plant employed in engine testing.

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Emmons to Offer Help to Inexperienced.

Since Mr. Emmons, of the Emmons Specialty Co., Detroit, took over the accessory business of the Gray Motor Co., this year, he has developed a department devoted to the interests and welfare of the inexperienced motor boat man in corresponding with those who want information or suggestions. This department has been well patronized. Mr. Emmons' experience in the motor boat sport has covered many years, in which he has acquired a wide practical knowledge of the many needs in motor boat equipment. He is accordingly in a position to offer very valuable services to any who wish to call on his company for such information, which will be cheerfully offered without any obligation on the part of the questioner. A condensed folder, embodying the necessary things for boat and engine, is published by this company, and will be found of help to every one who wishes to pick out the best and proper equipment for his boat.

These boats are fitted with the "Evinrude" detachable motor, which can be clamped in position on an ordinary rowboat in a moment.

Sturtevant Gasoline Electric Generating Sets.

The B. F. Sturtevant Company, of Hyde Park, Boston, Mass., has just placed upon the market a new line of gasoline electric, generating sets. These are of a very superior quality and are intended to operate without using a storage battery as an equalizer which is generally necessary with gasoline electric generating sets, although such a battery may be used if power is desired when the generator is not in operation. This particularly desirable feature is obtained by means of a governor which controls the speed so closely that the voltage variation between no load and full load and under sudden fluctuations of lead is very slight.

The set is altogether as reliable and as satisfactory in operation as highly developed steam driven generating sets of the same size.

The sets consist of Sturtevant Gasoline engines direct connected to Sturtevant Electric Generators. The engine is of the four cycle, water cooled automobile type with either four or six cylinders, according to the size. They are at present built in three sizes, 5, 10 and 15 k.w.

The vertical multi-cylinder, automobile type engine has been chosen by the makers as being the most reliable, the best adapted for steady continuous service and the most familiar form of the gasoline engine. It is, therefore, the most satisfactory type that could be chosen, since no experienced engineer is necessary for its operation. It is particularly adapted to the lighting of country estates, hotels, and for power boat service stations. It requires little attention and may be placed in the garage basement, shop or engine room where it is out of the way.

These sets are built in the shops of the B. F. Sturtevant Company whose steam engine generating sets have been for years standard equipment in the United States Navy. The same workmanship, superior design and reliable and durable construction that characterizes the steam units are found in these gasoline generating sets.

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Five Year Old Ferro Wins Championship.

The winning of the Bass Lake, Ind., championship by the little 18 foot runabout Minnie C equipped with 3½ h.p. Ferro Motor, was, to say the least of it, a somewhat extarordinary feat. Owner L. M. Chapman, of Chicago, had never raced the boat before but was prompted to try his luck by the satisfactory service the little engine had given him. There were nine entries, including the boat which had won the event for the last four years, and Minnie C, equipped as for everyday service, took the lead immediately and kept it to the end, covering the 11½ miles in 49½ minutes. One result is that great enthusiasm prevails with reference to next year's champion race now that local owners have realized that it is a more open event than had been supposed, and it is anticipated that many more entries will be made.

A Chesapeake Bay "Dugout" made from a single log, and fitted with a 12 H. P. Bridgeport engine.

Wisconsin Company's Foreign Trade.

The Wisconsin Machinery and Mfg. Company, of Milwaukee, has issued a new catalogue for 1913, the contents of which will prove interesting to anyone contemplating the purchase of a row-boat motor. The descriptions are clearly and concisely written and a sectional drawing shows all details of construction. The Wisconsin Company will send a copy to any reader who may apply.

The company are rapidly extending their foreign business having fixed up a Belgian Agency with Messrs. Legurrier & Legrand, of Brussels.

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How to Use Jeffery's Glue.

L. W. Ferdinand & Company, Boston, Mass., remind us that there is both a correct and an incorrect way of applying marine glue. They impress upon the user that it is not a good plan to heat all the glue you expect to use right away, it being a much more satisfactory method to heat just what is necessary for immediate use, as continual boiling seriously affects its adhesive qualities. Another point worth watching is the condition of the oakum or cotton caulking, which should be perfectly dry. When applying glue to old work care should be taken in that the material previously used should be carefully removed. Ferdinand & Company supply Jeffery's Marine Glue suitable for all purposes, and will be glad to send samples and price lists on application.

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A Power "Dugout."

On this page we reproduce an illustration of what may be termed the earliest known type of boat brought up-to-date by the installation of a 12 h.p. Bridgeport engine. The boat itself is a typical Chesapeake Bay dugout.

"Minnie C," an 18-foot runabout, winner of the Bass Lake championship. Equipped with a 3½ H. P. Ferro motor.

Business Brisk at Toppan Factory.

The Toppan Boat Manufacturing Co., of 25 Haverhill Street, Boston, Mass., report record business both in complete and knocked down boats, and moreover anticipate a continuance of the rush right through 1913. They have recently supplied Frank Timerman, of Apulia Station, N. Y., with one of their widely known 27 x 7 ft. raised deck cruisers equipped with 8 h.p. two cylinder motor and an exceptionately complete fit-up of accessories and conveniences. This type of boat, which is exceptionally roomy, fairly speedy and an excellent sea craft, is also made in a 30 x 8 ft. size. The Toppan Co. have supplied another 26 x 7 ft. square stern launch to the U. S. Government for the Fish Bureau steamer Fish Hawk; this makes the third boat of similar type supplied for this purpose. Business in the knock down department is also very brisk, orders being in hands for Samoa, New Zealand, and England; full instructions, prints, etc., are sent out with each boat enabling any amateur to assemble a finely modelled crusing outfit.

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Boston Motor Boat Show.

The general manager of the Tenth National Motor Boat and Engine Show, to be held at Boston, Mass., from February 1st to 8th, inclusive, in sending an attractive hanger with bird's-eye views of the principal New England vacation waters, calls the attention of manufacturers and dealers to the immense opportunities for extension of business afforded by the territory adjoining as well as by the actual floating possibilities.

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A World Trip With a Comet Magneto.

The Henricks Novelty Co., Indianapolis, Ind., advise us that Mr. and Mrs. Harry Humphries, who are motorcycling around the world for a wager of ten thousand dollars in one thousand days, are using a Comet magneto to give light both for their machine and tent, the magneto also supplies current for the horn, and is working very satisfactorily despite the strenuous nature of the work it is called upon to perform.

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Progress of George B. Carpenter & Co.

For upwards of forty years the firm of George B. Carpenter & Co., of Chicago, was located on the corner of Fifth Avenue and South Water Street, where the business of manufacturing and jobbing marine supplies was carried on; during this period as the result of steadily increasing trade one department after another was forced to vacate and settle in larger space in either the company's factory building at Illinois and Wells Streets or the warehouse at corner of Indiana and Orleans Streets. The phenomenal growth of the motor boat trade eventually resulted in the original premises being quite inadequate to the volume of business and some nine months ago the Carpenter Co. removed altogether to Wells and Michigan Streets with altogether gratifying results. A special study is made of the prompt and accurate filling of orders and personal attention to individual requirements. The company claim that they now have the largest and best equipment in the country devoted to the distribution of marine supplies.

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"Gasoline Engines" Practical and Clearly Written.

The author of "Gasoline Engines, Their Operation, Use and Care" claims for his book that it has been primarily written for the use of novices and that consequently he has, as far as possible, refrained from talking of technicalities in the usually accepted technical terms. Following out the lines thus indicated the possessor of A. Hyatt Verril's book will observe that the illustrations, most of which are original, have been emphasized in regard to important points even although their value as scale drawings might possibly suffer as a consequence. Simplified tables of screw-threads, pipe sizes, etc., are given in such form that they will be found useful by the expert as well as by the tyro. An extremely instructive chapter on makeshift repairs and a glossary of technical terms are a distinct feature. Mr. Verril's literary style is concise but clear and he certainly seems to have the gift of imparting knowledge in an attractive manner. The chapters are arranged to give, as it were, a series of progressive lessons from a description of the fundamental principles of the internal combustion engine in its original form to the operation of the sleeve-valve type marking the last word in construction; ignition, carburetors, and equipment generally are dealt with and descriptions and illustrations of leading makes of motors and fittings are fully touched upon. The work, as we have already indicated, will be found useful and instructive by the expert engineer as well as by the beginner.

"Gasoline Engines, Their Operation, Use and Care," by A. Hyatt Verril. The Norman W. Henley Publishing Co., 132 Nassau Street, New York. $1.50.

Frederick D. Nathan's 45-foot cruiser. Design by Bowes & Mower, Philadelphia, illustrated on page 57. Equipped with Standard motor.

A Practical and Non-Technical Treatise.

Victor W. Page, M.E., is the author of an attractively bound and exceptionally well illustrated work of over 700 pages entitled "The Modern Gasoline Automobile"; it is a well arranged and practical work, giving in simple language reliable and up-to-date information on all phases of gasoline automobile construction, equipment, and repair. The author is a past master in the art of communicating knowledge on mechanical matters in an interesting and conclusive way, and although the various points are dealt with exhaustively the comparative novice need not continually refer to a technical glossary in order to connect up with the descriptive text. The illustrations are clear and distinctive, they show actual mechanism of accepted commercial propositions, not freak or experimental constructions. The author defines the essential elements of the modern gasoline car, explains the basic principles, and describes the relation the various parts bear to one another, in the order mentioned and in a lucid manner which should appeal not only to the motorist and student, but also to the salesman, demonstrator, designer, or engineer. "The Modern Gasoline Automobile," by Victor W. Page, M.E. The Norman W. Henley Publishing Co., 132 Nassau Street, New York. $2.50.

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The Romance of Flying.

Glenn H. Curtiss, who flew from Albany to New York, and who won the Gordon Bennet content in France, is the author of "The Curtiss Aviation Book" published by the F. A. Stokes Company of New York. The entire book is full of interest to those who are studying the many problems of the air, but attention should be particularly given to the chapters dealing with the evolution of the hydroaeroplane from its inception and its crudent form to the flying boat of to-day which will cover 50 miles an hour in the water, 60 miles in the air, and, being provided with wheels, will travel on land at a good speed.

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Morris Heights Firm Busy.

The Gas Engine & Power Company and Charles L. Seabury & Company, consoliuated, Morris Heights, New York City, have launched a new twin-screw 66 ft. cruising motor yacht, "Shadow," equipped with two six-cylinder 8 x 8 Speedway gasoline motors, capable of driving the boat at a speed of 26 m.p.h. "Shadow" is of the raised deck, midship deck type, with trunk cabin aft over owner's stateroom, saloon, etc. The boat is lighted throughout with electricity and will be used at his winter home, Miami, Fla., by Carl G. Fisher, for whom a 30-foot hydroplane with one engine similar to "Shadow's" is also being built. The same firm are building a 60-foot mahogany boat for G. H. Walker, St. Louis, Mo., for service at his summer home, Kennebunkport, Maine. This boat is of the day cruiser type and will be fitted with two six-cylinder 6 x 6 Speedway engines. A speed of 21 m.p.h. is guaranteed.

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Chicago Agency for Milwaukee Boats.

The Milwaukee Yacht and Boat Company have recently appointed the Warren Sales Company their agents for Chicago and vicinity and they will exhibit a number of runabouts, yacht tenders and canoes, among which will be the boats described elsewhere in this issue, at the salesroom, 1413 Michigan Avenue. The Warren Co. have devised the novel idea of displaying a runabout in a large tank, thus giving those interested an opportunity of observing its good points. The Milwaukee Co. wish it to be known that they attribute the rapid increase in their business in no small degree to the continuous service they render the purchaser after delivery of their boats; this service will be extended to Milwaukee boat owners by the Warren Co.

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The Remy Company Make New Appointments.

The Remy Electric Co., Anderson, Ind., have appointed E. P. Kempton, of San Francisco, as manager of their branch in that city, succeeding A. J. Rogers who takes over the management of the New York branch in place of F. M. Henkel, who has resigned. W. F. Hamilton becomes assistant manager of San Francisco and A. H. Berndt of the sales department now occupies Mr. Hamilton's former position as assistant manager at Indianapolis.

A Smart Little Boat.

The Pee-Bee, a 22 foot boat engined with a three cylinder 4 x 4 inch Pierce-Budd motor, although not originally designed for racing, has proved so speedy since her present owner, Bernard Brousseau, vice-president of the Canadian Motor and Supply Co., Montreal, fitted her with the Pierce-Budd that she has cleared up quite a nice collection of mugs. We are indebted for photograph to E. Drolet, yacht designer, Park Laval, Que.

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Macnish Is St. Louis Agent for Buffalo Engines.

A. C. Houser, sales manager for the Buffalo Gasolene Motor Co., has announced the appointment of the Macnish Electrical and Supply Co., 3685 Olive Street, St. Louis, Mo., as their St. Louis agents.

L. A. Curtis, of New Zealand, traveling 20 miles per hour. The hydroplane is fitted with a 10 H. P. Erd motor made by the Erd Motor Co., Saginaw, Mich.

"Nemadji," built by the Racine Boat Co., Racine, Wis., for the United States Engineer Service. Length, 60 feet 9 inches; beam, 12 feet; draught, 4 feet. Powered with one 100 H. P., six cylinder, four cycle Standard motor.

Evinrude Motors.

The "Evinrude" Detachable Rowboat Motor, manufactured by The Evinrude Mfg. Co., Milwaukee, Wis., is a powerful detachable gasoline engine invented by Mr. Ole Evinrude, of Milwaukee, Wis. It is a one cylinder, 1½ H. P. water cooled motor, constructed of high grade material and is almost indestructible. The propeller and steering device are so combined as to make a complete self contained power plant which can be clamped to the stern of a boat of ordinary size by means of two thumbscrews, in less than a minute's time. It is adjustable not only as to depth, but to the angle of stern met with in different shapes and kinds of rowboats or dinghies. The complete outfit weighs but 50 pounds and can easily be carried about like a satchel, in the canvas case specially designed for the purpose. The speed range of the motor is from 200 to 1,000 revolutions per minute. It can be run as slow as two miles an hour (a desirable trolling speed), and is guaranteed to drive an ordinary rowboat as fast as eight miles an hour. The method of lubrication is somewhat different from that used on other marine engines, and is effected by mixing the oil right in with the gasoline, which lubricates the entire engine. This eliminates dirty and greasy oil cups. Another feature is the steering which is done by the propeller alone, no rudder being necessary. The propeller is also weedless, and as it requires but nine inches of water, the motor can be run in exceedingly shallow places, impossible with a motor boat. This motor is reversible and starts on a half turn of the fly-wheel. As a matter of fact, it is not cranked as an ordinary motor is, but the small fly-wheel is simply given a slight swing and the motor starts instantly.

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Fairbanks, Morse & Co. Engine River Boats.

The number of shallow draft, gasoline propelled river boats is rapidly increasing on the Ohio and it seems probable that within the near future they will handle the bulk, if not all, the river commerce. These boats are crowding the steamboats out on account of their being able to give equally efficient service at a considerably lower cost. The boats vary in size, most of them being between 50 and 100 feet in length with a draft, when loaded, of about 20 inches. The prevailing method of propulsion is the stern paddle wheel which enables the boat to be easily handled in narrow places. The engines installed in these boats by Fairbanks, Morse & Co., Chicago, Ill., are of various sizes from 10 to 60 H. P., driving either through long belt and countershaft, or where cabin space is an object by gear drive. Boats used for passenger traffic and thus equipped often reach a speed of 12 M. P. H. One great advantage of the type of boat described is that no wharf is required for landing and that as a rule they can be handled by two men. Altogether over 80% of the boats working between Pittsburg and Cairo are fitted with Fairbanks, Morse & Co. engines, some of which have been in service over 15 years.

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The Corliss Marine Engine.

The Corliss Gas Engine Co., 21-23 California Street, San Francisco, manufacture the improved type of Corliss engine in a wide range of H. P. with one to six cylinders. A strong feature is made of absolute standardization and interchangeability, the question of accessibility has received careful consideration, and in fact the engine is replete with those little refinements of design which mean so much comfort for the user. Although the present management has been in charge of the concern for only about eighteen months it has already been found necessary to double the factory capacity and in addition further building operations are now under way which will result in an increased manufacturing capacity of fully another third.

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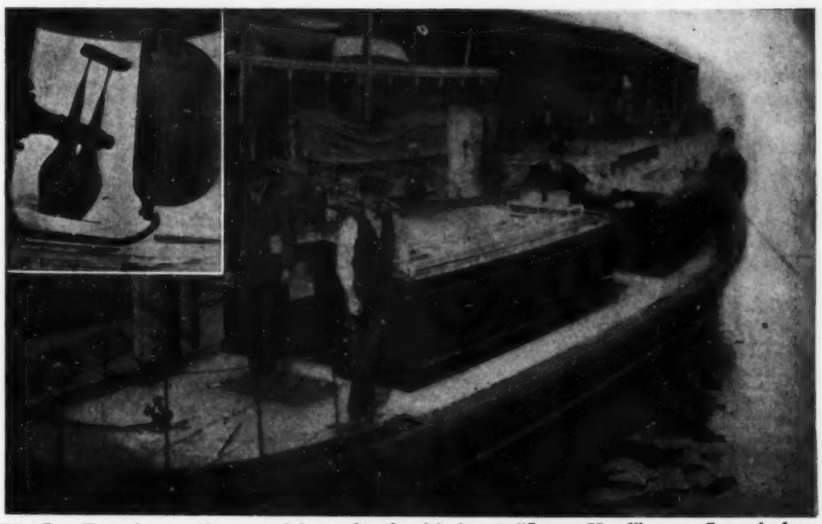
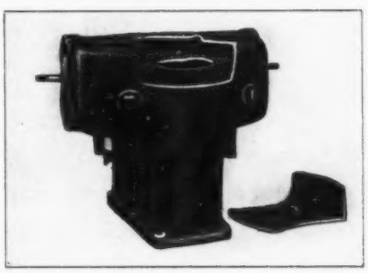
Bryant & Berry Co., Propeller Experts.

Elsewhere in this issue we illustrate the reversible propeller manufactured by the Bryant & Berry Co., 32-34 Atwater Street, Detroit, Mich., this is their latest specialty and is winning golden opinions from users. L. C. Julien, the owner of the boat which we picture, while apologizing for his use of the expression, sums up his opinion in referring to the wheel as "some" propeller. E. L. Ensey also writes of his very satisfactory experience. Bryant & Berry emphasize that this speed wheel is a perfect weed cutter in addition to its other good qualities. They make a solid propeller which is well known and highly esteemed both in this country and abroad.



The San Francisco police patrol boat, fitted with latest "Spear Head" type Coyne's box turbine propeller, which has increased speed over 33 per cent. Inset is cut of propeller.



Repair effected by Waterbury Welding Co. at one-third cost of new cylinder.

"Pee-Bee," a little Montreal flyer.

The Lombard Safety Starter.

The Elbridge Engine Co., of Rochester, N. Y., has acquired the exclusive manufacturing and selling rights to the Lombard Safety Starter and will continue to market it under the Lombard name. They claim that their model D differs from any other rear starter on the market in several important details. It acts on the engine shaft through a series of steel gears with ratios so calculated that a two cycle engine of 5 inch bore can be turned over fast enough to start on magneto, the device is noiseless, and the gears automatically disengage when the engine starts. The possibility of back-kick has been eliminated and experiment has shown that even with spark fully advanced the operator is not in the least inconvenienced. Prices range from $15 to $30.

• • •

Milwaukee Motor Co. Changes.

A change has taken place in the personnel of the Milwaukee Motor Co. and the former officers' and stockholders' interests have been purchased by the new executive. The new president is J. C. Coerper; vice-president and general manager, A. F. John; with Harry G. John as secretary and treasurer.

• • •

Gilmore Auto-Marine Motors.

The Gilmore Motor Manufacturing Co., of Detroit, Mich., are offering for their 1913 leader the 1½ H.P. two cycle three port auto marine motor of which we give illustrations. The view showing the dismantled engine will prove of interest as all the various component parts are displayed. This engine which, fitted with a 10 inch wheel, runs at 800 R.P.M. is designed specially for service and pleasure in dinghys, row boats, canoes, etc., specification is given elsewhere in this issue.

• • •

The Waterbury Co.—Welding Specialists.

The series of illustrated folders, issued by The Waterbury Welding Co., of Waterbury, Conn., ought to be in the hands of everyone who has dealings of any kind with internal combustion engines.

The Waterbury Welding Co., specializes on the efficient treatment of cracked, broken or scored cylinders, broken crank and transmission cases. In fact, they weld practically all parts of aluminum, iron, brass or steel.

The guarantee, which covers every repair they make, is perhaps the strongest offered by any welding concern. They allow a year's test from date of repair. If, for any reason due to poor workmanship on their part, the repair is unsatisfactory, the part may be returned at the company's expense. Upon inspection they will refund the charges or do the work over without extra charge.

The high quality of the work produced by this company, backed by their iron-clad guarantee of satisfaction or money refunded, has gained for them a coast to coast reputation.

Take, for instance, the all too common case of a scored cylinder. The accepted method has always been to re-bore and increase the diameter of the cylinder by twice the depth of the deepest scoring. The result is that, in the event of subsequent breaking of piston rings, the owner is placed in the awkward and costly position of getting special replacements made owing to the fact that the cylinder has ceased to be of standard size.

The Waterbury Welding Co. treats the repair in an entirely different way. They do not re-bore. By the process of oxy-acetylene welding, they weld to the scored part, metal of the same quality as the cylinder itself. With a special machine, they grind the interior of the cylinder until it is perfectly smooth. The diameter remains the same as before scoring, perfectly smooth and round. The old piston and rings will fit the repaired cylinder.

Where a cylinder has been cracked, a similar process is used. Metal is welded to the broken section and fused at a heat of 6,500 degrees Fahr. The metal joins in one solid piece. It is then finished by special machinery until, in many cases, the break is scarcely noticeable. The repaired part is as strong and as serviceable as when new.

The Waterbury Welding Co. also welds broken castings of all kinds, such as cylinders with corners knocked off, crank cases with broken bearing supports, arms, etc. Where a part is broken off and missing, they build up and replace it. The finished repair is guaranteed to give satisfaction.

All repairs are made within twenty-four hours after the part reaches their shops—they give everyone the promptest possible service.

Their charges range from one-quarter to one-third the cost of the new part. We illustrate two cylinders which they repaired and the amounts saved for the customers.

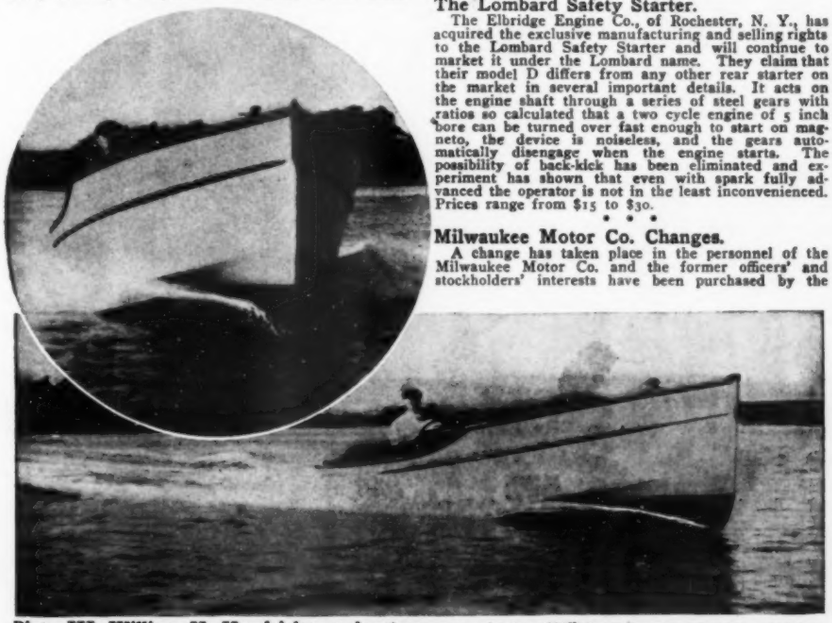
The Waterbury Welding Co. is a responsible firm, one which can be recommended in every way. The company will be pleased to send full details of their work to anyone interested.

• • •

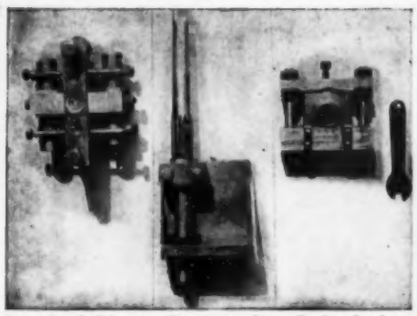
Northwestern Steel Works Adds New Engine.

Adding a high power, medium duty engine to their line, the Northwestern Steel and Iron Works of Eau Claire, Wisconsin, have used the powerful twin screw design. The rating of the engine is 20 H.P. and it is adapted for hulls up to 45 or 50 feet in length.

The largest output any one year of their ten years of motor building has been concentrated on two particular sizes. The "Four," a single cylinder, two cycle, two port type is extensively in demand for the boat averaging 18 to 20 feet. The simplicity of its control and care has made it particularly popular with the foreign trade.



Piute III, William H. Hands' latest development of the "V" bottom, built for his personal use. She is a 24-footer, with a 30 H. P. Scripps engine. Her owner is enthusiastic on the subject of her seaworthiness and speed.



Standard Motor Construction Co.'s device ensuring perfect alignment.

For the average owner of a pleasure boat, for the fisherman or light house keeper or yacht tender, the "Northwestern Ten" is particularly attractive. Its two cylinders are cast en bloc. The simplicity of the single cylinder engine is characteristic of the big "Ten." Boats from 20 to 35-foot lengths find it amply powerful.

The past year has given the Northwestern motor a large increase, not only at home, but especially in the foreign field and their distribution is world wide. The extensive plant at Eau Claire, Wis., has been largely increased to take care of the volume of business.

* * *

Cleveland Co. Introduce New Boat.

Something new in Water Craft and something new in Auto Craft, describes the new 16 foot Junior Special just being put on the market by The Cleveland Auto Boat Mfg. Co., Cleveland, Ohio.

This is an extremely light model, especially suited for use on small streams, rivers and lakes, and in waters where weeds come to the surface. It is very suitable for fishermen, huntsmen, etc., enabling them to enjoy the pleasures of the sport and go anywhere a row boat will go without the hard work and disadvantages of rowing. To meet the requirements of hunting and fishing, the boat is fitted with a special underwater exhaust, making it noiseless in operation. It is also arranged for one man control, engine, tiller, etc., being in reach of the operator without leaving his seat.

The price of the boat comes within the reach of every sportsman—$135.00 for the craft complete.

The 16 foot Junior Special weighs 450 pounds. The entire frame is of oak, copper and brass fastened throughout. It is powered with a 3 H.P. Ferro engine, and is capable of making about 9 miles per hour. The boat is finished in natural, and presents a pleasing appearance on the water.

A folder describing this new craft will be sent upon application.

* * *

The Strelinger Marine Engine.

The Strelinger Marine Engine Co., Detroit, Mich., the manufacturers of the Strelinger heavy duty, four cycle engine which for some fifteen years has occupied a foremost place in the opinion of users of marine engines on account of its unvaried reliability, have reorganized their business, a large amount of new capital having been invested and an intelligent and progressive campaign inaugurated for the coming season. The Strelinger 1913 catalog, which has just been published, is not only a most attractive brochure, but contains a mine of information for anyone who contemplates the purchase of a marine engine. It pictures and explains clearly and concisely the five different models of the Strelinger, and also the line of two cycle, three port Little Giant marine engines, which are made in six sizes. This catalog will be mailed free to anyone who is interested.

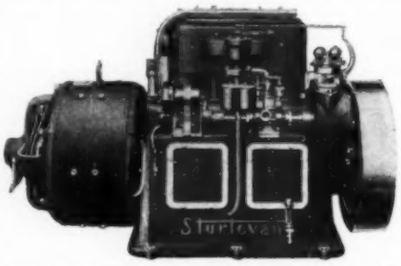
* * *

Carlyle Johnson Co. Appoint N. Y. Agent.

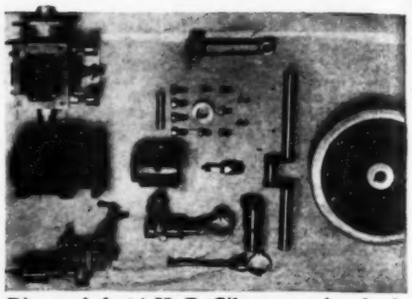
The Carlyle Johnson Machine Company, of Manchester, Conn., have recently appointed the Eastern Marine Motor Sales Company, of 136 Liberty Street, New York, their agents for that city and its vicinity. Indications point to an unprecedented demand for the Carlyle Johnson Company's reverse gears, and ample preparations are being made to take care of all orders promptly.

CAILLE PERFECTION MARINE & LAND ENGINES
for PETROL or PARAFFIN.
SOLE AGENTS FOR SCOTLAND & IRELAND.
THOS HILL & Co. 65 ROBERTSON ST. GLASGOW.

Caille Perfection Motor Co.'s engines exhibited in Scotland.



Gasoline electric generating set, made by the B. F. Sturtevant Co., Boston, Mass.



Dismantled 1½ H. P. Gilmore engine, leading line of the Gilmore Motor Mfg. Co., Detroit.

* * *

Sale of the Cacique.

The Hollis Burgess Yacht Agency, Boston, Mass., has sold the big auxiliary yawl Cacique formerly owned by E. E. Conway, of Boston, to John S. Curtis of the same city, a member of the Eastern Yacht Club. Cacique is one of the finest cruising yachts afloat and was owned at one time by Lawrence Armour, of Chicago. The same agency has sold the 35 foot waterline auxiliary yawl Rebecca formerly owned by John S. Curtis to a prominent member of the Boston Yacht Club.

* * *

Sterling Company's Progress.

The Sterling Engine Company, Buffalo, N. Y., experienced an unusually successful season during 1912, and the coming year finds them well prepared to meet an even larger increase in business. The addition to the plant on Niagara Street will be finished early in the spring, and will about double the working capacity of the factory. The new building extends along Niagara Street, and will be converted into a modern assembly shop, affording every facility conducive to accurate workmanship. It will be flooded with natural light from three monitors in the roof, running the entire length of the building.

Sterling engines made a remarkable showing in every branch of the marine service during the past year. Installed in speed boats, runabouts, open launches, light and heavy cruisers and commercial boats of every description, they performed their work in a most consistent manner. In the racing game the 8 cylinder, 150 H. P. Sterling engine made practically a clean sweep of all the big regattas in the country. It was selected for the entire American Team of Cup Defenders for the British International Championships in Huntington Bay, and powered such well known speeders as Baby Reliance II, Baby Reliance III, Ankle Deep, Tech Junior, Neptune III, Belle L, champion of the south, and a score of others. The Dixie Junior hydroplanes, including the famous little P.D.Q. II, of Alexandria Bay, are also driven by the 6 cylinder Sterling engine. There are several new international cup defenders already being built in this country for the 1913 races which will be driven by the 8 cylinder, 150 H. P. engines.

In the commercial field the strength of the Sterling is being felt each year with increasing force. The heavy duty engines, built in all sizes, are rapidly finding their way into passenger boats, freighters, fishing boats and barges. On the Pacific Coast the commercial interests are awakening to the fact that a heavy duty engine of refined construction and a little lighter weight than the old-fashioned cumbersome machine is of much greater value and has a longer life.

"Cupid," a forty-foot runabout, powered with a 200-H.P. eight-cylinder Emerson engine Co.'s motor, traveling at over 35 miles per hour.

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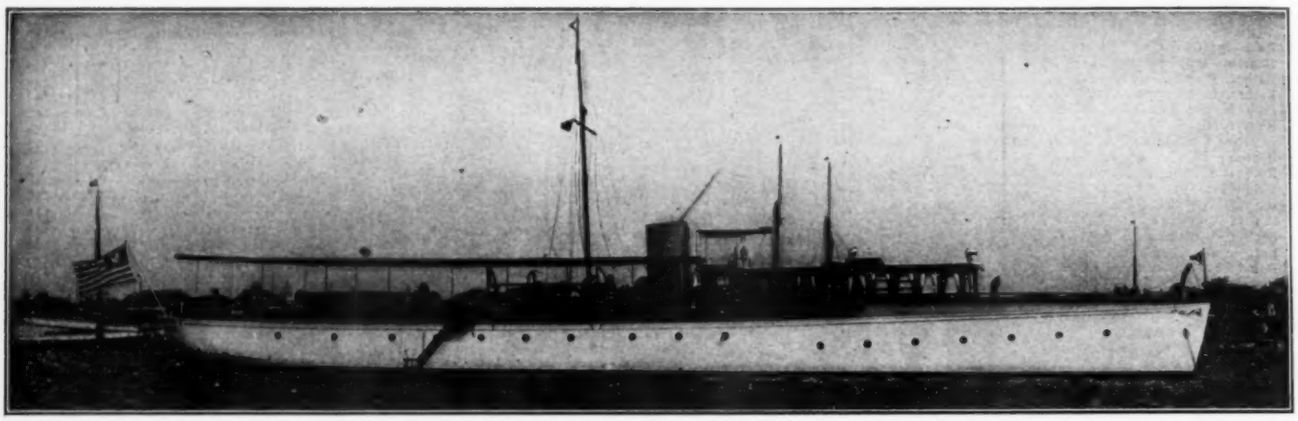
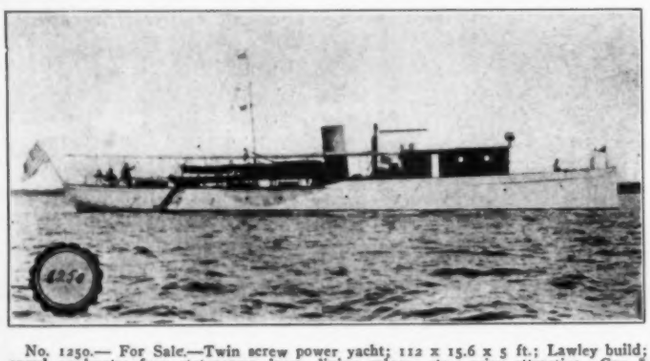
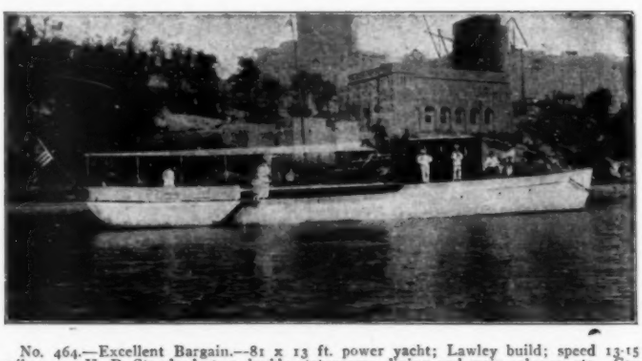
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER
A few are shown on this page. Plans, photographs and full particulars mailed on request.



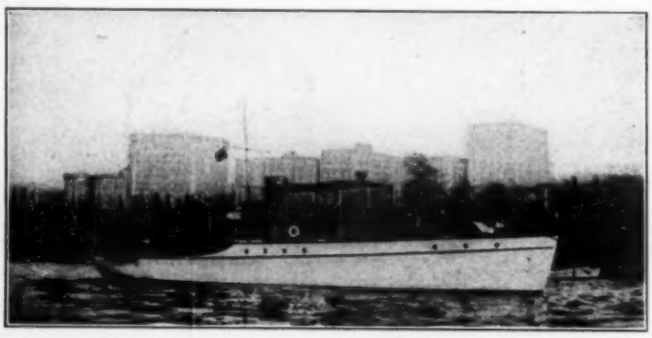
No. 885.—For Sale or Charter.—Exceptionally handsome, fast, steel, twin screw cruising power yacht; 118 x 16.6 x 5 ft. Built 1910, from our design. Speed up to 18 miles; two 300 H. P. Craig motors, three double staterooms, main and dining saloons, two bathrooms, electric lights, etc.; handsomely finished and furnished. Probably the most desirable proposition ever offered in a large gasoline yacht. Apply to Cox & Stevens, 15 William St., New York.



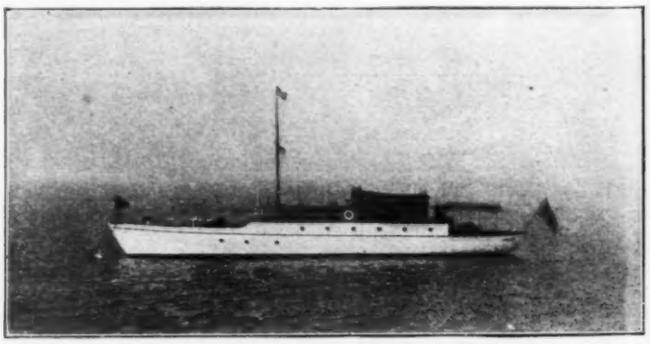
No. 1250.— For Sale.—Twin screw power yacht; 112 x 15.6 x 5 ft.; Lawley build; speed 13 knots; four staterooms, large dining saloon, etc.; price attractive. Cox & Stevens, 15 William St., New York.



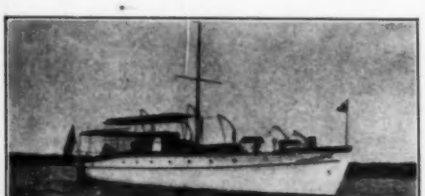
No. 464.—Excellent Bargain.—81 x 13 ft. power yacht; Lawley build; speed 13-15 miles; 100 H. P. Standard; two double staterooms, dining and main saloons, etc. Cox & Stevens, 15 William St., New York.



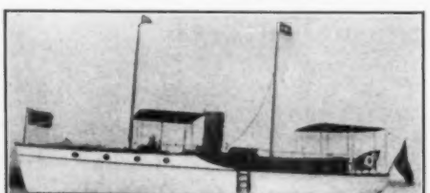
No. 1532.—For Sale or Charter.—Best 75 ft. cruising power yacht available. Speed 12-14 miles; twin screw. Three staterooms, bath, independent lighting plant, etc. Cox & Stevens, 15 William Street, New York.



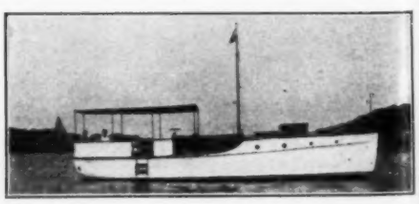
No. 484.—Exceptional Bargain.—Twin screw gasoline cruiser; 70 x 12 x 3.6 ft. Speed 13-15 miles; two 40-50 H. P. Speedway motors (new 1911). Two double staterooms, large saloon, electric lights, etc. Apply to Cox & Stevens, 15 William St., New York.



No. 726.—For Sale.—Raised deck cruiser, 65 x 13.8 x 3.6. Speed 12-14 miles. Double and single stateroom, large saloon, electric lights, etc. Cox & Stevens, 15 William St., New York.



No. 1305.—For Sale.—Bridge deck cruiser, 50 x 10.6 x 3.6 ft.; launched August, 1910. Speed 11-12 miles; 25-35 H. P. Standard. Double stateroom, saloon, etc. Cox & Stevens, 15 William St., New York.



No. 1075.—For Sale.—Raised deck cruiser; 40 x 9.8 x 3.6 ft. Built 1910 by Electric Launch Co. Speed 10 miles, 16-20 H. P. Standard motor. Stateroom, saloon, toilet room, etc. Bargain. Cox & Stevens, 15 William St., New York.

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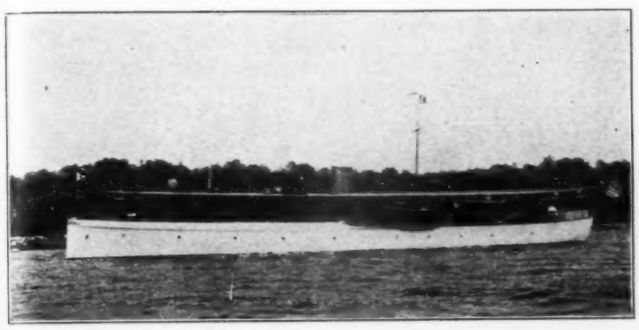
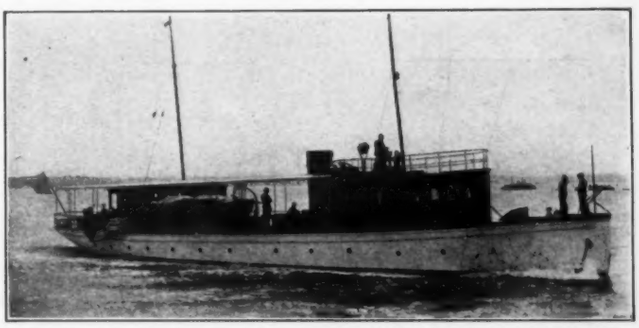
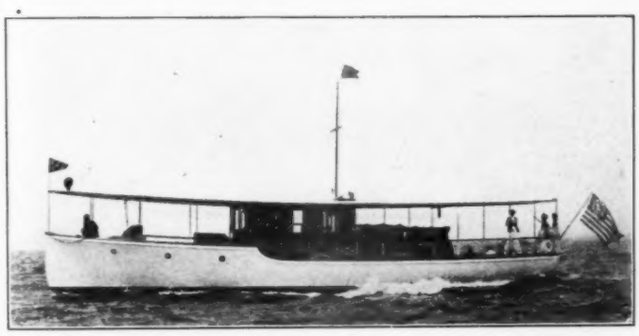


No. 7183.—Lawley cruiser, 112 over all; 5 staterooms; bath; two 150 Craigs; speed 14 knots; electric lights and heat; low price. Stanley M. Seaman, 220 Broadway, New York.
Please mention MOTOR BOATING.

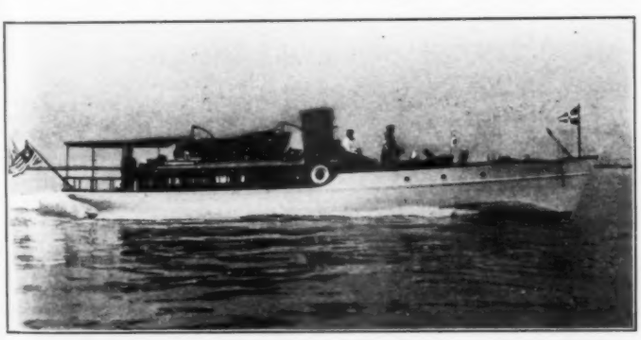


No. 6731.—Elegant cruiser, 98 x 16; 3 staterooms; 2 baths; two 75 Standards; speed 13 knots; low price. Stanley M. Seaman, 220 Broadway, New York.
Please mention MOTOR BOATING.

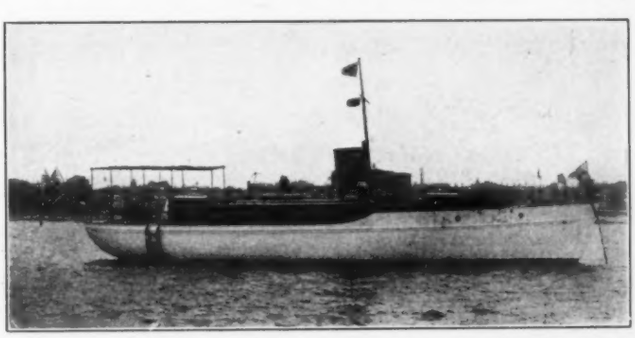


No. 7165.—64 x 13½; by Herreshoff, 1912; 3 staterooms; electric lights. Stanley M. Seaman, 220 Broadway, New York.

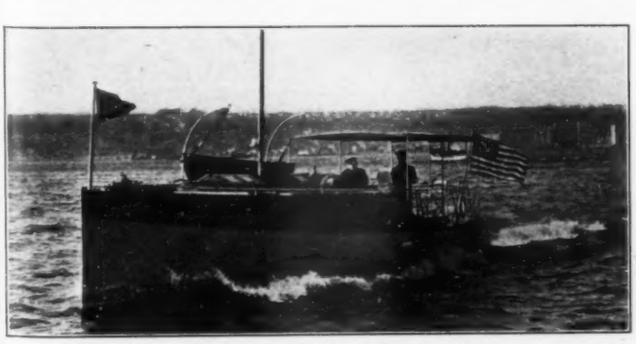
No. 7081.—64 x 17 x 3½; Lawley build; four staterooms, 2 saloons, bath; 25 Standard Ideal cruiser. Stanley M. Seaman, 220 Broadway, New York City.



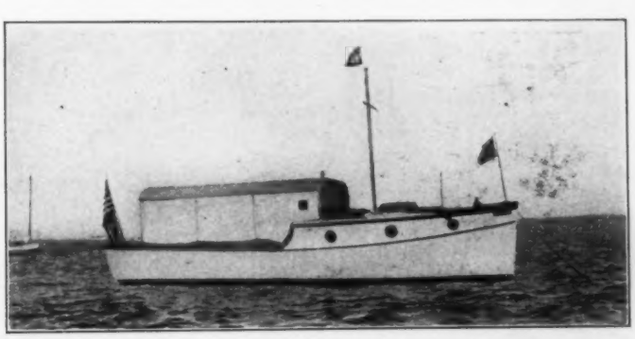
No. 7106.—Latest Cruiser, 56 o. a., 3½ draught; stateroom, saloon; 85 Murray & Tregurtha; speed 15 knots. Stanley M. Seaman, 220 Broadway, New York City.



No. 7120.—Coast Cruiser, 53 o. a.; new 1912; stateroom and saloon, berth 6; 40 Murray & Tregurtha; low price. Stanley M. Seaman, 220 Broadway, New York.



No. 6788.—Famous 40 foot ocean cruiser, cost $5,500; everything in perfect condition; speed 11 miles; bargain. Stanley M. Seaman, 220 Broadway, New York.
Please mention MOTOR BOATING.



No. 7186.—30 x 7; launched 1910; cabin berths 2; toilet, Acetylene light; low price. Stanley M. Seaman, 220 Broadway, New York.
Please mention MOTOR BOATING.

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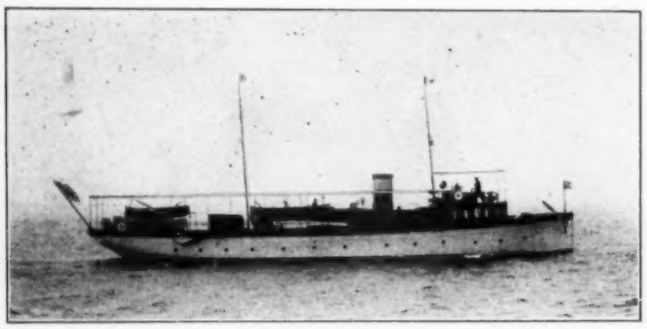
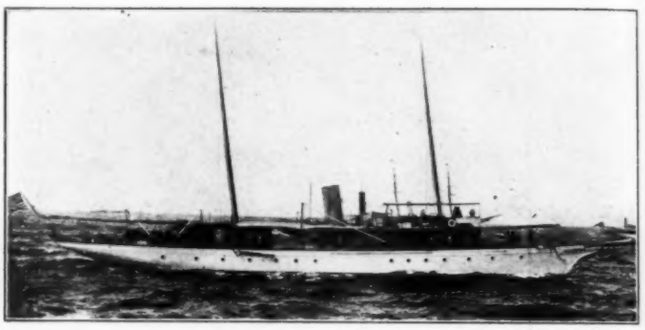
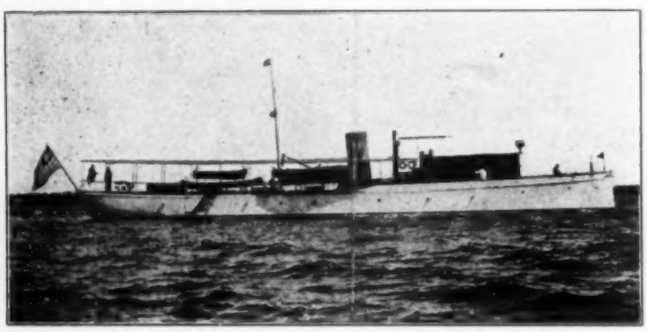


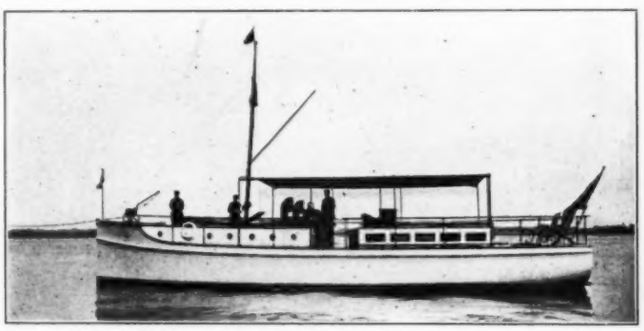
No. 1557.—Sale and charter, flush deck motor yacht, 98 x 16 ft. two Standard engines.
Please mention MOTOR BOATING.



No. 113.—Steel steam yacht, 140 ft. x 18 ft. 6 ins. Exceptionally fine accommodation. Condition A1.

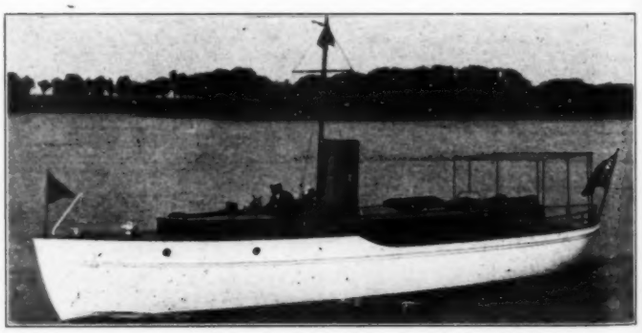


No. 1388.—Twin coast cruiser, Lawley built, 112 ft.; 5 staterooms; 2 first-class motors.
Please mention MOTOR BOATING.

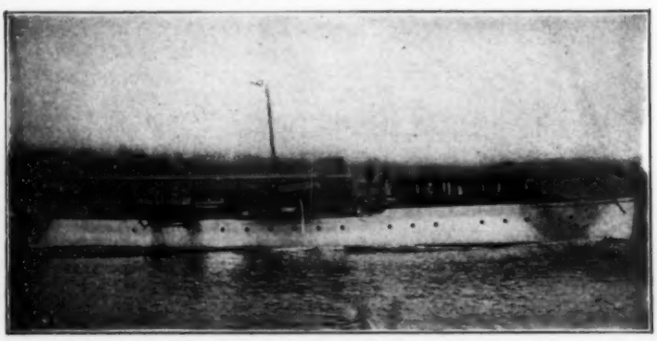


No. 1837.—Staunch twin-screw cruiser, 50 ft. x 12 ft. 10 ins., recently built.
Please mention MOTOR BOATING.

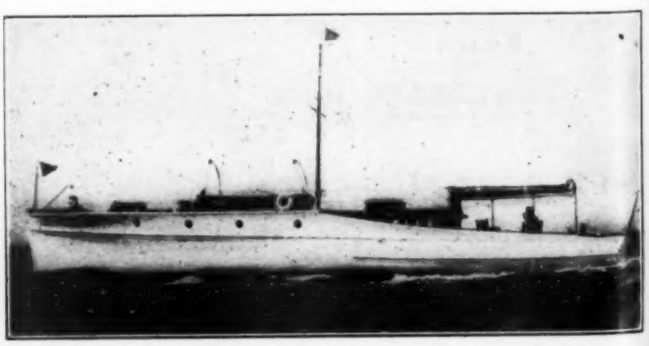
No. 1094.—Able cruiser, 60 ft. Standard motor. Suitable Southern use.
Please mention MOTOR BOATING.



No. 1875.—New bridge deck cruiser, 52 ft. x 10 ft. Murray & Tregurtha motor.
Please mention MOTOR BOATING.



No. 1523.—Sale and Charter.—Fast, commodious 98 ft. twin-screw cruiser; built 1910. Standard motors.



No. 1735.—Heavily built, 60 ft. cruiser, launched 1911; 60 h.p. engine.
Please mention MOTOR BOATING.

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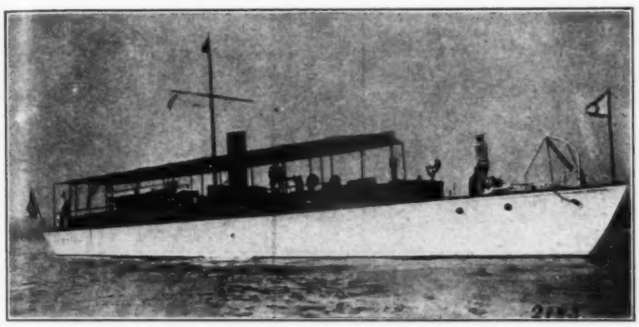
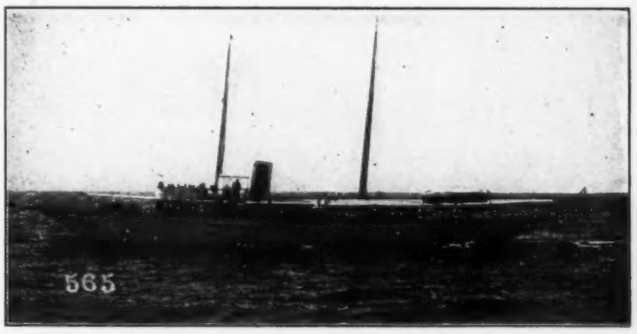
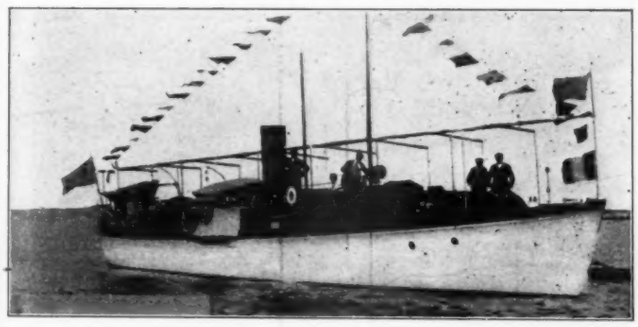


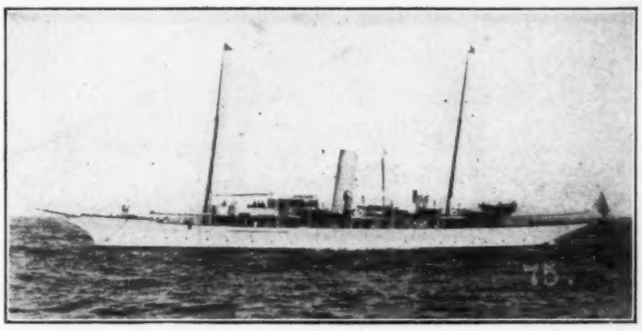
No. 2165.—92 ft.; 18 miles; twin-screw power yacht; offered by estate at low figure.
Please mention MOTOR BOATING.



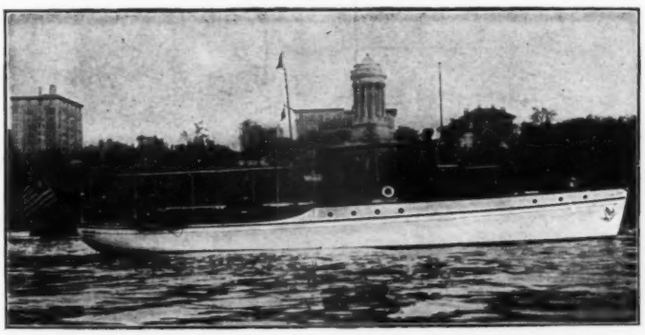
No. 565.—Sale, charter; 145 feet, 13-15 knots, 2 double, 3 single staterooms.
Please mention MOTOR BOATING.



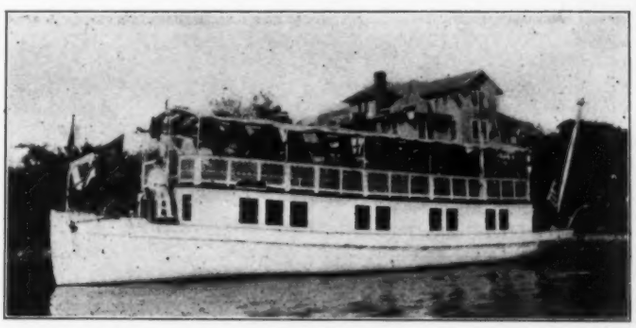
No. 3166.—Sale.—Handsome 90 footer twin-screw motor yacht. Well adapted for Southern waters.



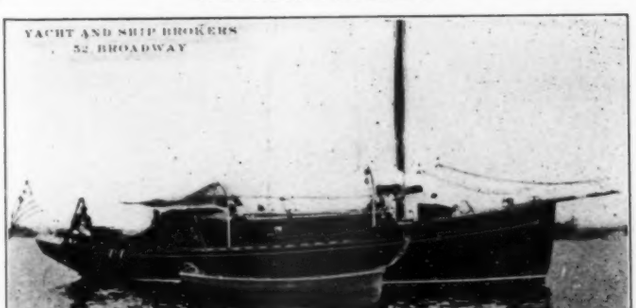
No. 75.—Sale.—Low price or charter, 200 foot ocean going steam yacht.
Please mention MOTOR BOATING.



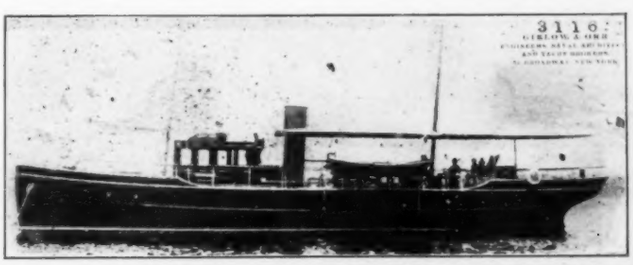
No. 3556.—Sale, twin screw, 75 feet; splendid condition and equipment.
Please mention MOTOR BOATING.



No. 1383.—Charter.—Attractive 60 foot power houseboat. Saloon, double and single stateroom, bath.



No. 3956.—Offered by estate. Auxiliary cruiser; 49 x 14 x 2½ ft. draught; practically new; sleeps 4 to 6; 30 H. P. motor.



No. 3116.—Sale.—Seagoing motor yacht. 73 x 14 x 4.8 ft. draught. Deck dining saloon.
Please mention MOTOR BOATING.

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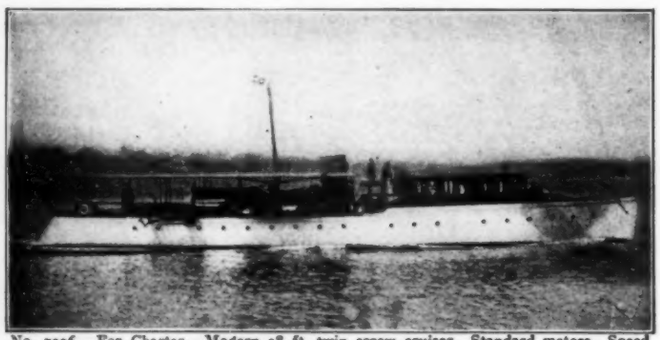
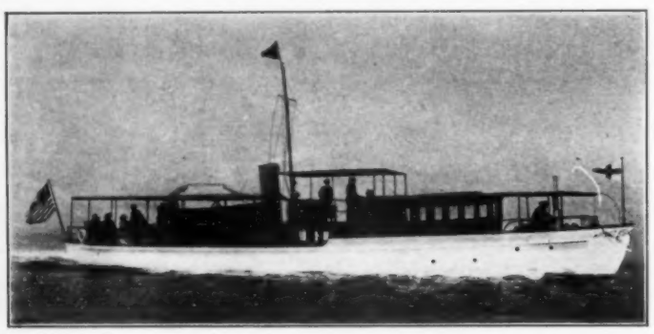
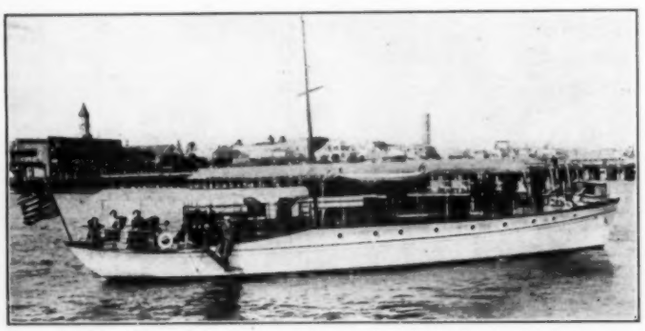


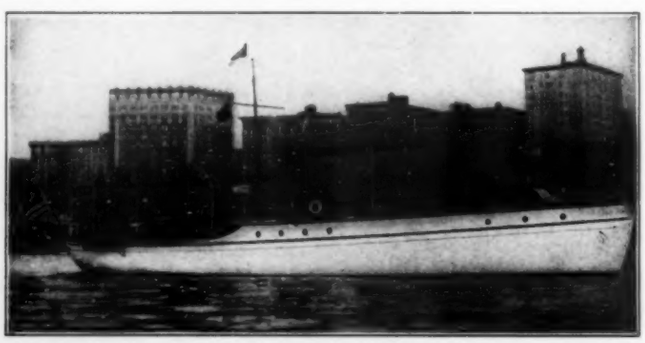
No. 7996.—For Charter.—Modern 98 ft. twin screw cruiser. Standard motors. Speed 14 to 16 miles.
Please mention MOTOR BOATING.



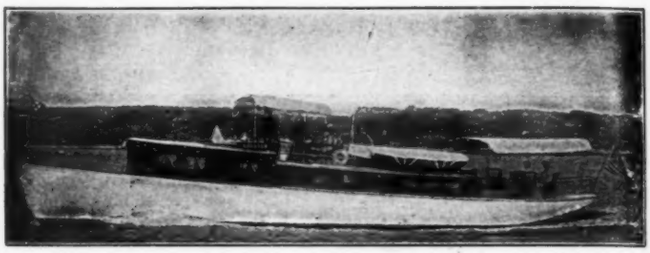
No. 7343.—For Charter—Exceptionally desirable 76 ft. twin screw motor yacht for southern cruising.
Please mention MOTOR BOATING.



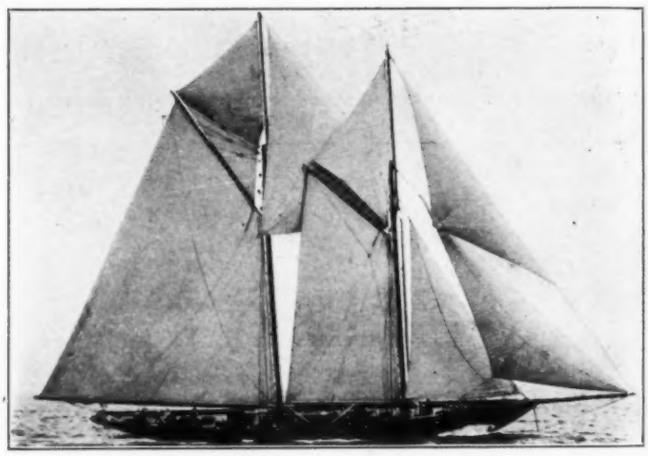
No. 7674.—For Sale or Charter.—75 ft. twin screw; 2 staterooms, saloon, bathroom, etc.; large deck space.
Please mention MOTOR BOATING.



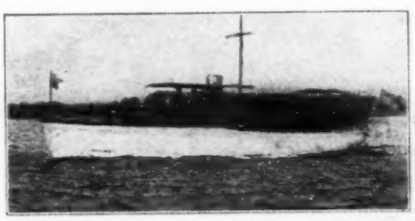
No. 8187.—For Sale—Charter.—Most desirable 75 ft. cruising power yacht available; 3 staterooms, saloon, bath, etc.
Please mention MOTOR BOATING.



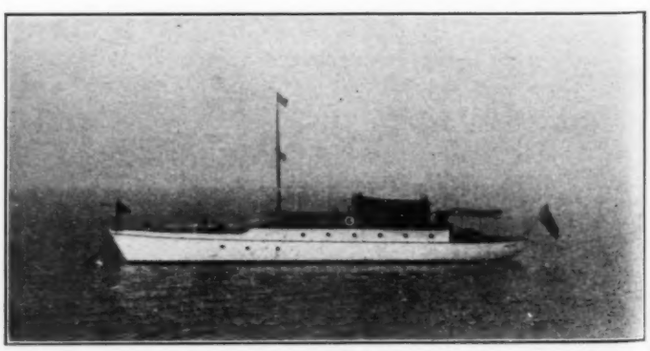
No. 7334.—For charter only, desirable twin screw 65-ft. cruiser; speed 12 miles.
Please mention MOTOR BOATING.



No. 97.—For Sale—Desirable auxiliary schooner, 115 ft. overall, 86 ft. water line, 22 ft. 6 in. beam, 13 ft. 6 in. draft; 100 H. P. Standard motor.
Please mention MOTOR BOATING.



No. 7717.—For charter only—Desirable 60 ft. cruiser; Jencick motor; speed 12 miles.
Please mention MOTOR BOATING.



No. 7314.—For sale at a bargain; twin screw gasolene cruiser, 70 x 12 x 3 ft. 6 in. draft; speed 13-15 miles; new Speedway motors 1911; 2 double staterooms, large saloon, etc.
Please mention MOTOR BOATING.

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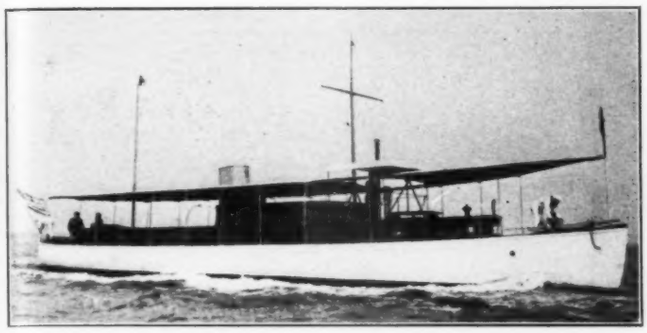
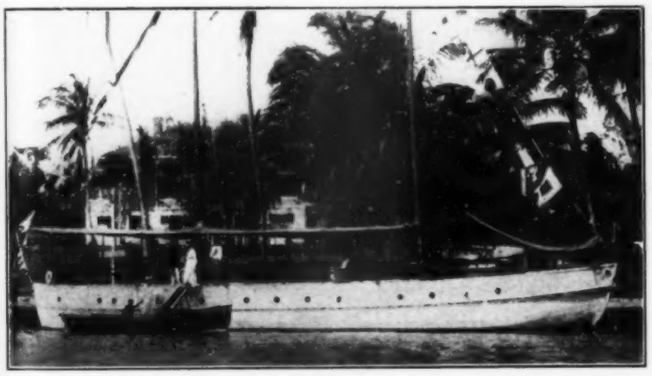


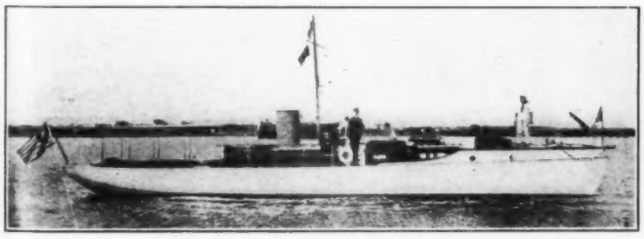
No. 7142.—For Sale.—Attractive cruising motor yacht, 87 ft. x 15 ft. 10 in. x 4 ft. 6 in. draft; in A 1 condition; thoroughly overhauled 1912 from stem to stern, including machinery; Craig motor; speed 14 miles.

Please mention MOTOR BOATING.



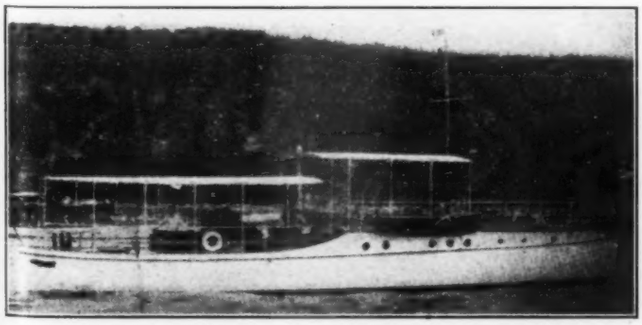
No. 7349.—For Sale, Charter.—75 ft. twin screw cruiser of houseboat type; saloon, 4 staterooms, bathroom, etc.; electric light; 20th Century motors.

Please mention MOTOR BOATING.



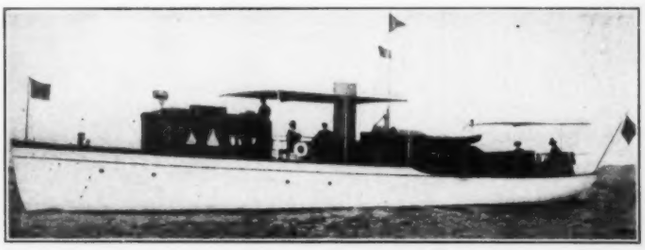
No. 7893.—For Sale.—Desirable 62 ft. cruiser; Standard motor; saloon, double stateroom, etc.

Please mention MOTOR BOATING.



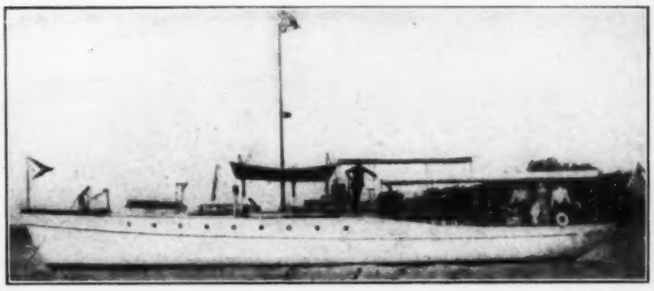
No. 7488.—For charter only; 66 ft. twin screw raised deck cruiser; saloon, double stateroom, bathroom, etc.; 20th Century motors.

Please mention MOTOR BOATING.



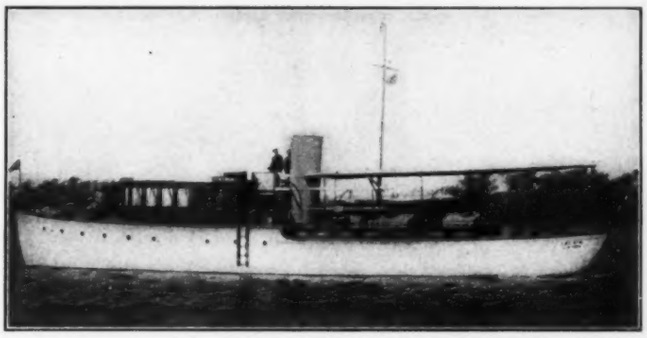
No. 7878.—For Sale.—69 ft. modern twin screw power cruiser; Standard motors.

Please mention MOTOR BOATING.



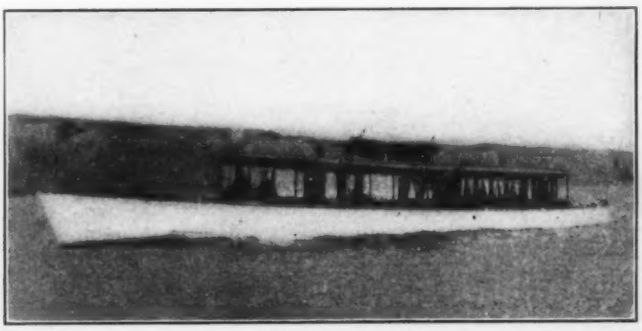
No. 7716.—Well known ocean cruiser, 65 ft. x 3 ft. 6 in. draft; 2 staterooms, saloon, 2 toilet rooms; Holmes motor; speed, 13 miles.

Please mention MOTOR BOATING.



No. 7871.—For Sale.—Most desirable 83 ft. cruising motor boat available; two 50 H. P. Standard motors; speed, 13 miles.

Please mention MOTOR BOATING.



No. 7409.—For Sale.—Exceptionally fast 70 ft. day cruiser; well adapted for ferry service; two 100 H. P. Speedway motors.

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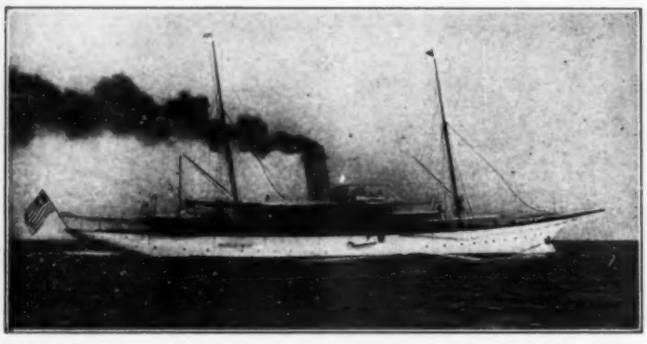
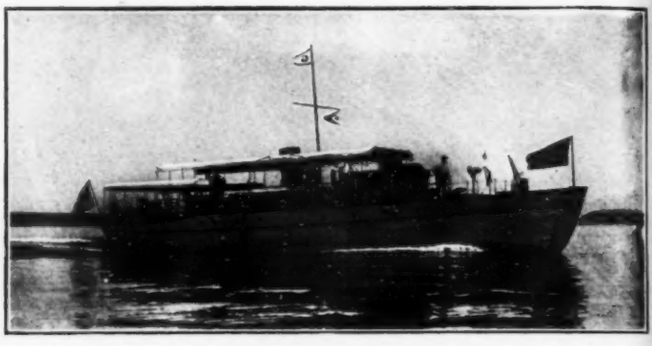
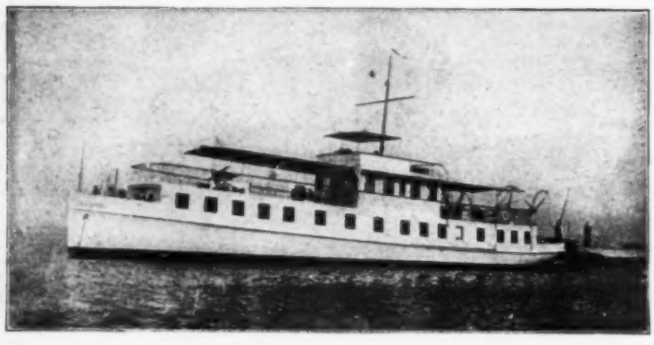


No. 3904.—200 ft. seagoing steam yacht. Accommodations aft. Reasonable price.
Please mention MOTOR BOATING.



No. 4840.—75 ft. gasoline cruiser, available for Southern charter.
Please mention MOTOR BOATING.



No. 5831.—110 ft. twin-screw gasoline houseboat, speed 10 knots. Charter only.
Please mention MOTOR BOATING.

No. 5908.—105 ft. fast gasoline cruiser; twin-screw; Standard motors.
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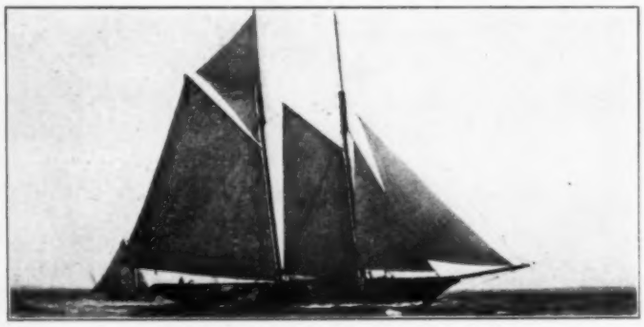
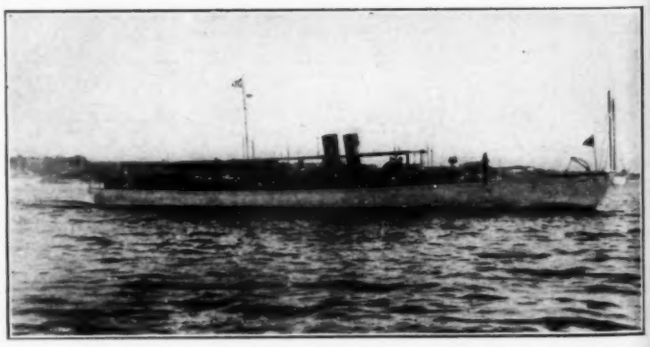
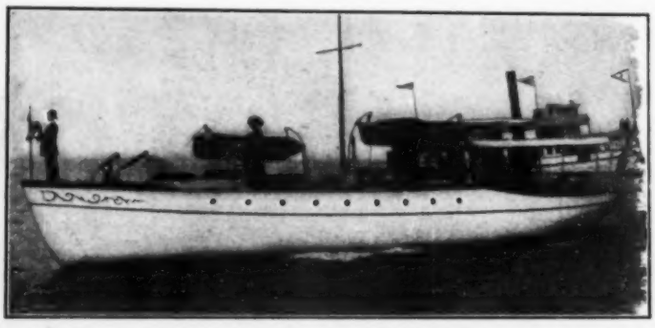


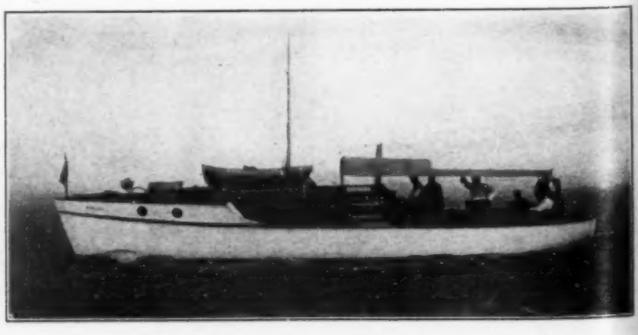
No. 4197.—100 ft. auxiliary schooner; Cary Smith design. One of the best cruisers afloat.
Please mention MOTOR BOATING.



No. 2210.—110 ft. express steam yacht; one of the fastest yachts of her type.
Please mention MOTOR BOATING.



No. 4835.—65 ft. raised deck cruiser, two staterooms and saloon. Good speed.
Please mention MOTOR BOATING.



No. 5911.—43 ft. gasoline cruiser. Standard motor; reasonable price.
Please mention MOTOR BOATING.

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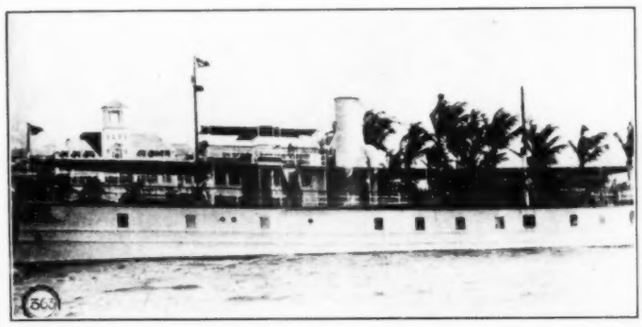
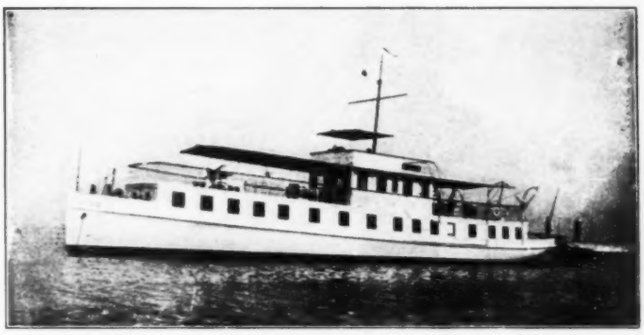
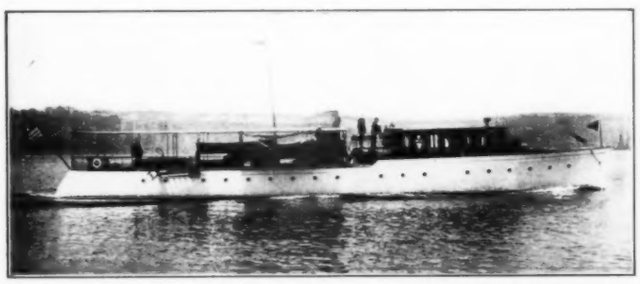


No. 363.—For Sale or Charter.—Twin screw steam house-yacht; 115 x 21 x 3.6 ft.; speed 11 miles; handsomely furnished and finished; five staterooms, large dining saloon, four bath rooms, etc. Cox & Stevens, 15 William St., New York.

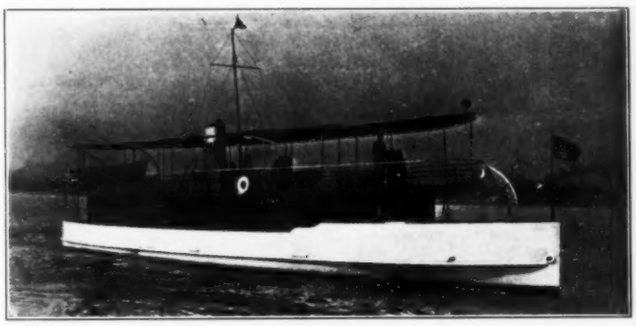
Please mention MOTOR BOATING.



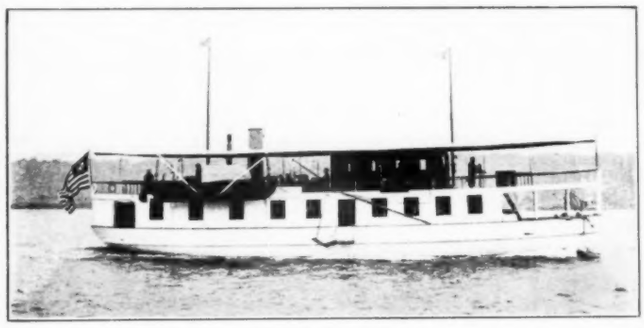
No. 1545.—For Charter at Low Figure.—Twin screw gasoline houseboat; 110 x 20 x 5 ft.; speed 11 miles; four large staterooms, saloon, bath, etc. Cox & Stevens, 15 William St., New York.



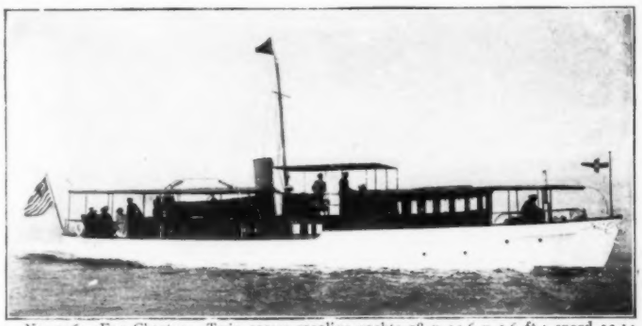
No. 979.—For Charter.—Fast up-to-date twin screw power yacht; 98 x 15 x 4.6 ft.; speed up to 16 miles; four staterooms, two bathrooms; all conveniences. Cox & Stevens, 15 William St., New York.



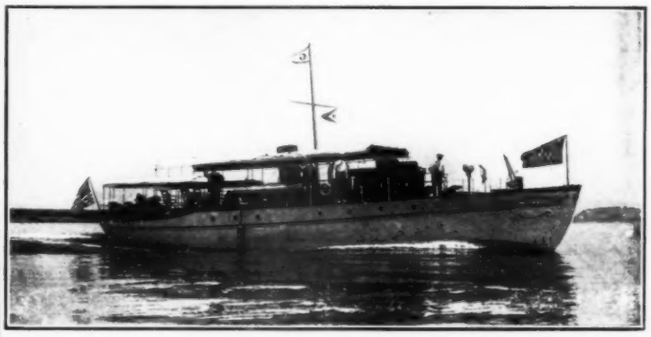
No. 1642.—For Sale or Charter.—Twin screw gasoline houseboat; 80 x 14 x 3 ft.; steel hull; four double staterooms; large main saloon, two bathrooms, etc. Cox & Stevens, 15 William St., New York.



No. 367.—For Sale or Charter.—Desirable twin screw gasoline houseboat; 85 x 23.6 x 4 ft.; speed 10-12 miles; three double staterooms, large saloon, two bathrooms, hot water heating plant, etc. Cox & Stevens, 15 William St., New York.

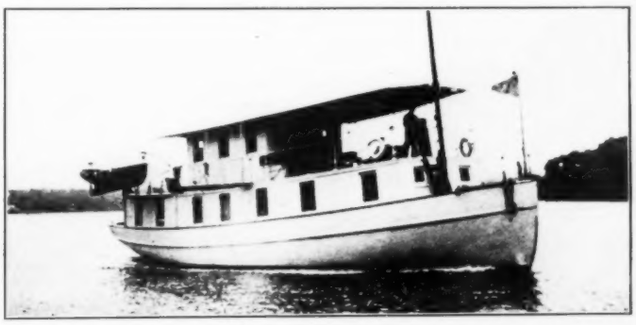


No. 546.—For Charter. Twin screw gasoline yacht; 78 x 12.6 x 3.6 ft.; speed 13-14 miles; double stateroom, forward and after saloons, bath, etc. Low figure. Cox & Stevens, 15 William St., New York.



No. 600.—For Charter.—Twin screw gasoline cruiser; 75 x 15 x 3.6 ft.; speed 12-13 miles; Standard motors; two double staterooms, bath, etc. Cox & Stevens, 15 William St., New York.

Please mention MOTOR BOATING.



No. 448.—For Sale or Charter.—Gasoline houseboat; 64 x 17.4 x 3.6 ft.; Lawley build; Standard motor; speed 7½ knots; four staterooms, large bathroom, etc. Cox & Stevens, 15 William St., New York.

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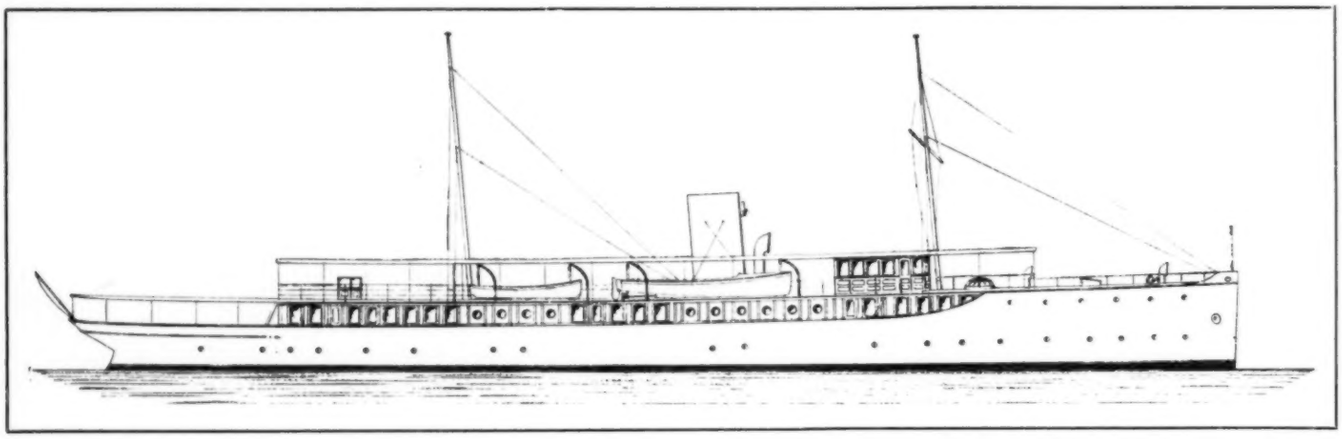

Sea-going steam yacht, 212 ft. x 27 ft. x 12 ft. 6 in.; 2 triple engines. Now under construction. Large steaming radius.

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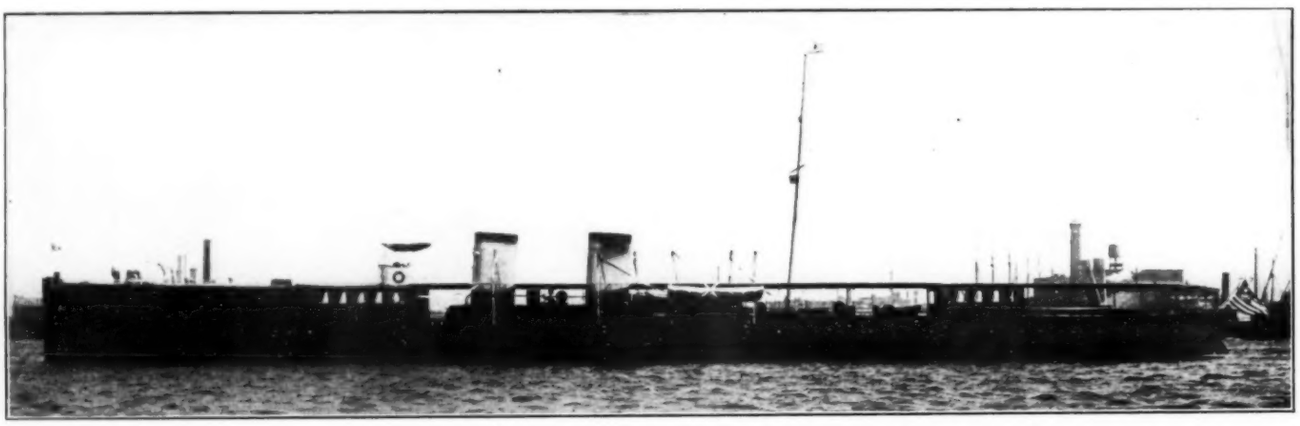

Winchester. 205 ft. x 18 ft. 6 in. x 6 ft. 6 in.; 2 Parsons turbines. The fastest steam yacht in the world.

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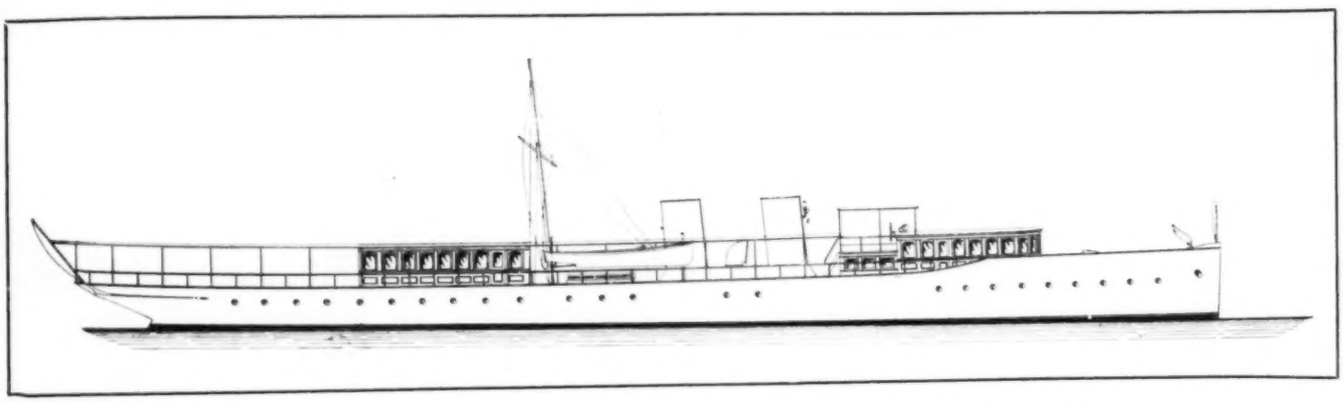

High speed cruising steam yacht, 165 ft. x 18 ft. x 6 ft. 6 in.; 2 triple expansion engines; now under construction.

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NEMAHA.
90 x 16 x 4 ft.; 2 100 H. P.
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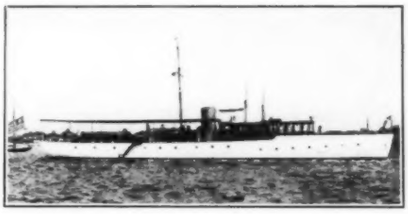
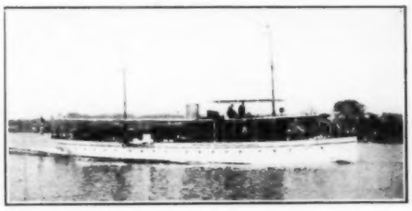


ALACRITY.
120 x 15 ft. 6 in. x 5 ft.; 2 300 H. P.
Designed by Cox & Stevens.



NORTHWIND.
99 x 17 x 3 ft. 6 in.; 2 100 H. P.
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VIATOR.
90 x 14 ft. 6 in. x 6 ft.; 1 100 H. P.
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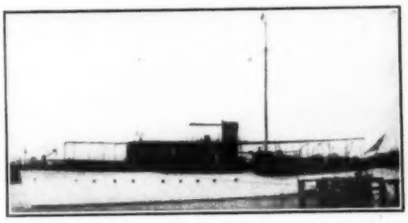

VENCEDOR.
90 x 17 x 4 ft.; 2 75 H. P.
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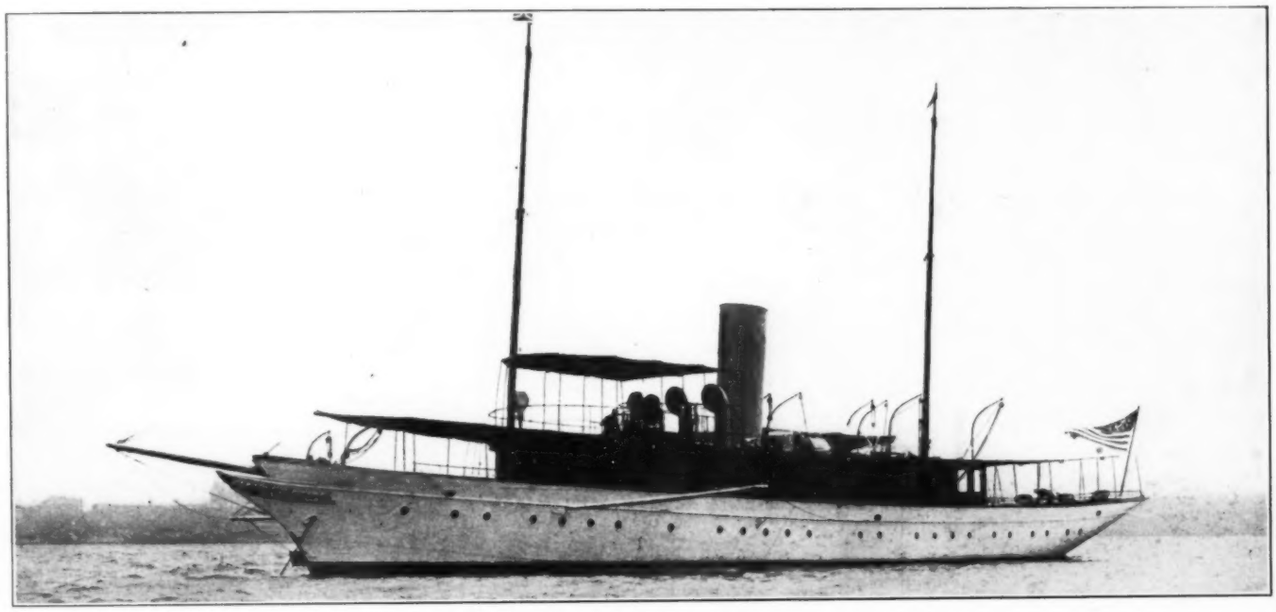
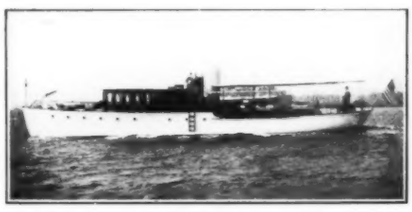
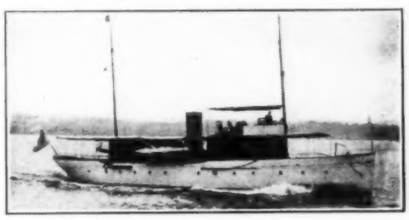


LA BELLE.—140 ft. x 19 ft. 6 in. x 7 ft.; 3 100 H. P. motors.
THE LARGEST MOTOR YACHT YET BUILT.

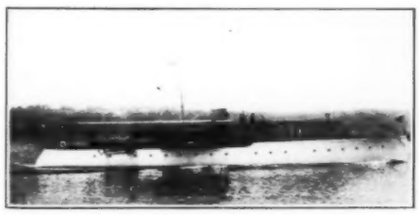


KALMIA.
84 x 14 ft. 6 in. x 3 ft. 6 in.; 2 50 H. P.
Designed by Cox & Stevens.

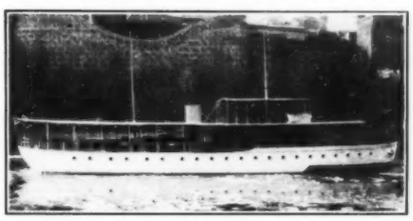
The cuts on this page illustrate some of our recent designs. We can show you many others from our boards.



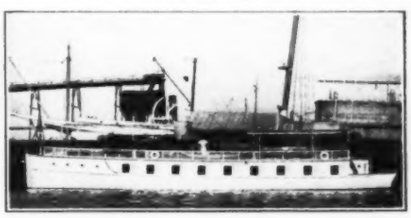
JOYEUSE.
Designed by Cox & Stevens.
98 x 16 x 5 ft.; 2 100 H. P.



MONA.
99 x 15 x 4 ft. 6 in.; 2 100 H. P.
Designed by Cox & Stevens.



CYNTHIA III.
110 x 20 x 4 ft. 6 in.; 2 100 H. P.
Designed by Cox & Stevens.



SANTANTA.
92 x 18 ft. 6 in. x 3 ft. 6 in.; 2 75 H. P.
Designed by Cox & Stevens.

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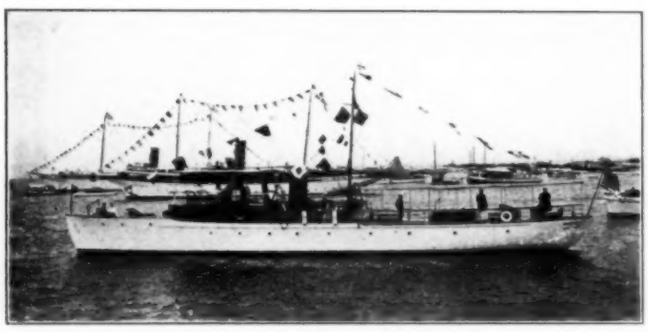
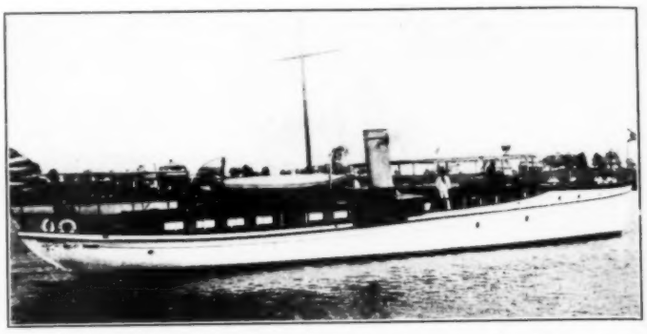
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars mailed on request.

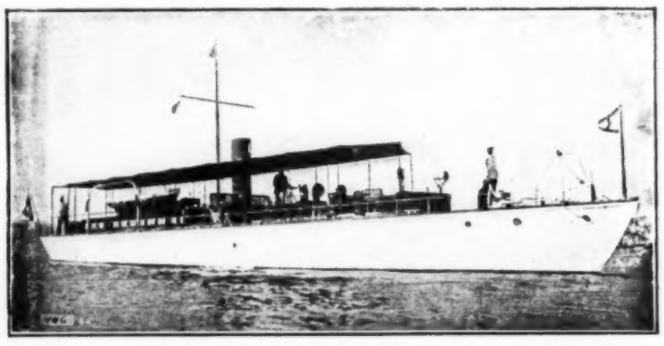


No. 1798.—Bargain.—Fast and able cruising power yacht; 105 x 15.5 x 4.9 ft.; built 1910; speed 16-20 miles; two 300 H. P. Standard motors; three double staterooms, dining saloon, baths; electric lights; fully found. Cox & Stevens, 15 William St., New York.

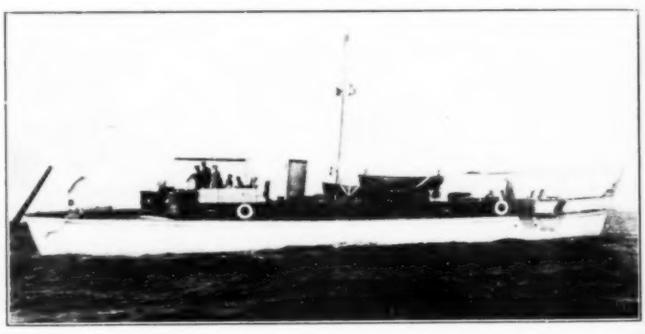


No. 965.—Exceptional bargain.—Very able cruising gasoline yacht; 100 x 17 x 4.6 ft.; recent build; speed 12-14 miles; Craig motor; excellent accommodations. Cox & Stevens, 15 William St., New York.

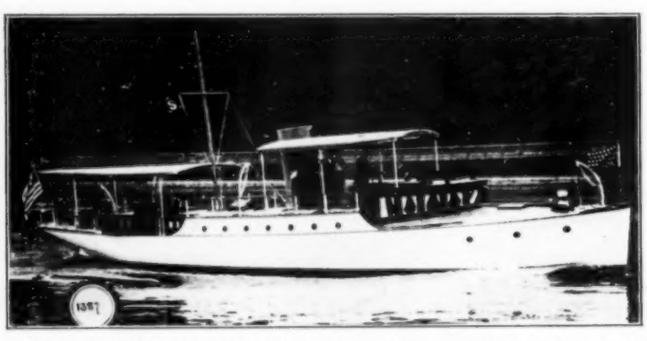
Please mention MOTOR BOATING.



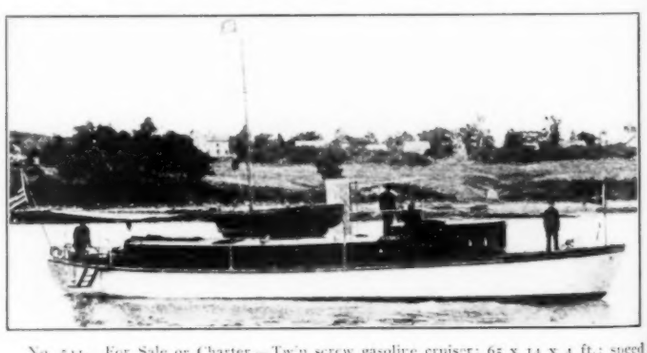
No. 446.—Bargain.—Fast twin screw gasoline yacht; 91 x 12.4 x 3.6 ft; speed up to 18 miles; double stateroom, large saloon, etc. Cox & Stevens, 15 William St., New York. *Please mention* MOTOR BOATING.



No. 442.—For Sale or Charter.—Cruising motor yacht; 80 x 13 x 3.6 ft.; speed 12-13 knots; 100 H. P. 20th Century motor; two double staterooms, saloon, bath, etc.; completely found; exceptional bargain. Cox & Stevens, 15 William St., New York.



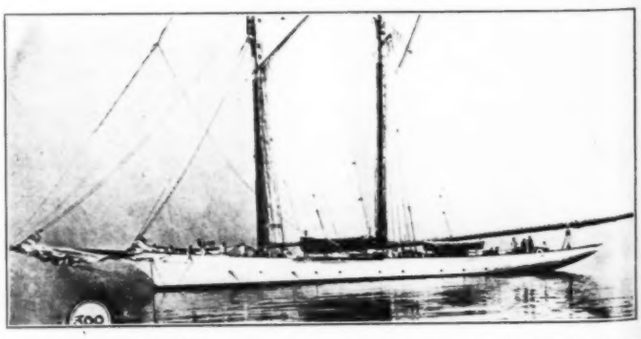
No. 1387.—For Sale.—Very desirable twin screw gasoline cruiser; 65 x 11.6 x 4.3 ft.; built 1911; speed 13-14 miles; 20th Century motors; two double staterooms, dining saloon, bath. Cox & Stevens, 15 William St., New York.



No. 544. For Sale or Charter.—Twin screw gasoline cruiser; 65 x 14 x 4 ft.; speed 11½ miles; large double stateroom; forward and after saloons; electric lights, etc.; very able. Cox & Stevens, 15 William St., New York.

No. 1064.—For Sale.—Cruising motor yacht, glass cabin type; now in the South; 63 x 12.6 x 4; entirely finished in mahogany; speed 11-13 miles; 70 H. P. 20th Century motor; very best construction; sleeps six in owner's party; large bridge and afterdeck; electric lights; in commission; price low. For photograph and further particulars apply to Cox & Stevens, 15 William St., New York.

Please mention MOTOR BOATING.



No. 300.—Unusual Bargain.—Seagoing auxiliary schooner, 130 ft. over all; recent build; speed, under power, 8-9 miles; large accommodation. Cox & Stevens, 15 William St., New York.

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Over twenty years' experience, and a thorough knowledge of all mechanical details, enables us to obtain the best possible results, by assigning to each feature its proper relative importance. Four hundred and more yachts of all types, and other vessels, have been built from our plans, for service in this country and other parts of the world. Our yachts are particularly noted for:

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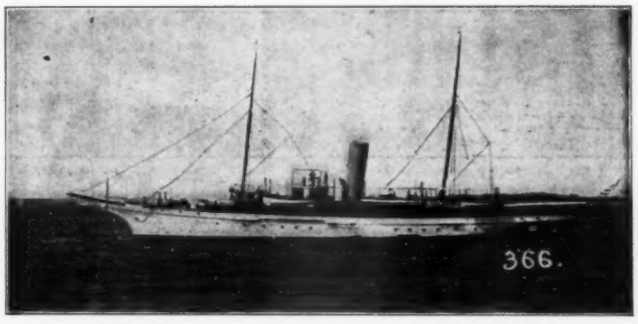
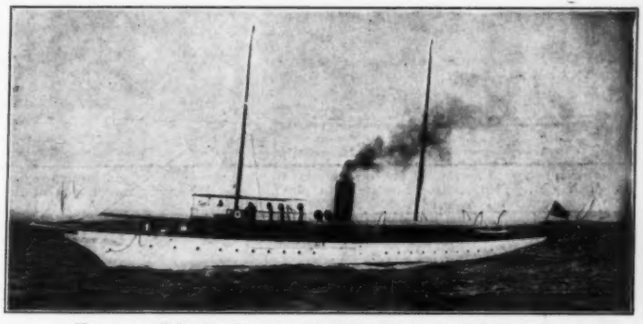
The fact that some of our customers have built two, three and four yachts from our plans, usually successively larger, shows the satisfactory nature of our work.

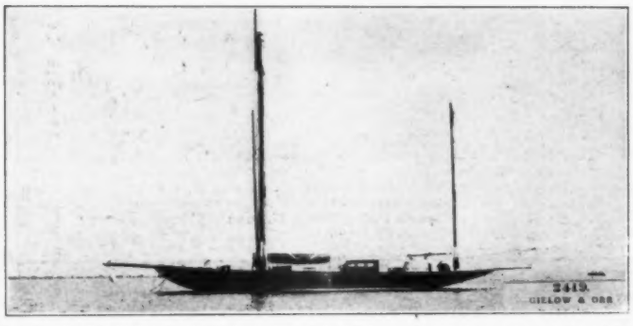
PLANS, SPECIFICATIONS AND ESTIMATES FURNISHED ON APPLICATION.



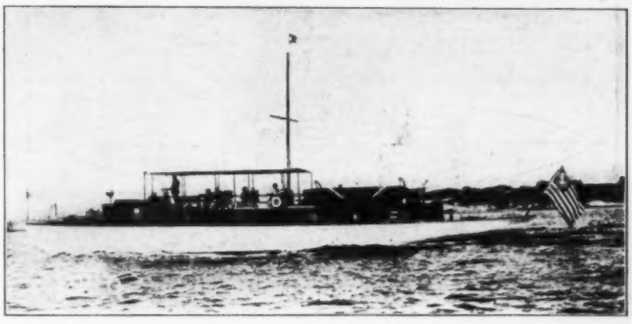
No. 366.—Sale, Charter.—200 ft.; ten staterooms; very desirable.
Please mention MOTOR BOATING.



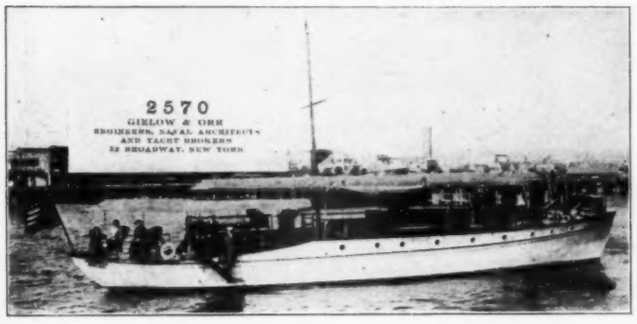
No. 3223.—Sale; 170 foot; 7 staterooms, 4 baths; owned by estate.
Please mention MOTOR BOATING.



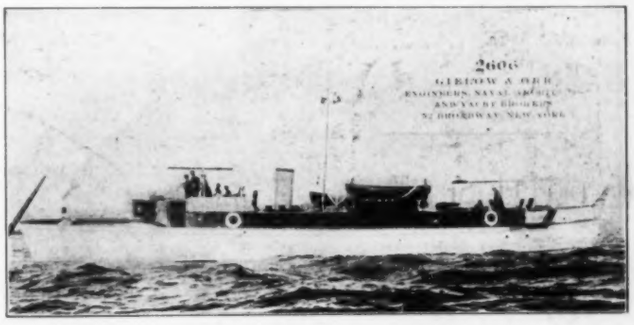
No. 2419.—Sale.—Low figure; 64 ft. water line; three staterooms; bath; designed so motor could be easily installed.



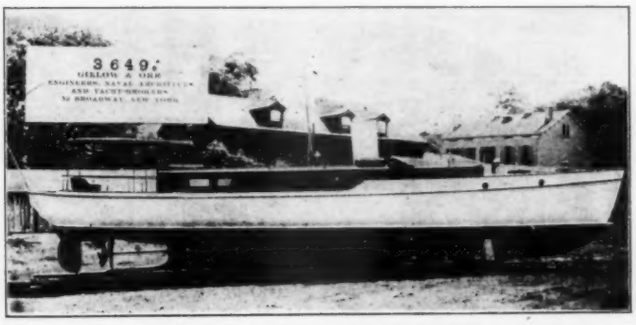
No. 1278.—Sale.—Twin screw, 93 ft.; three staterooms; 13 knots; large bridge deck.
Please mention MOTOR BOATING.



No. 2570.—Charter; now in commission, in Florida; twin screw; 75 ft.; two double staterooms, bath.
Please mention MOTOR BOATING.



No. 2606.—Sale, Charter.—Low figure; 80 ft.; two staterooms, bath; 20th Century motor.
Please mention MOTOR BOATING.



No. 3649.—Sale; practically new; 50 ft.; Lawley built; stateroom; saloon.
Please mention MOTOR BOATING.

No. 3906.—35 ft. Elco-Express at a sacrifice figure; 24 miles; 60 H. P. motor.
Please mention MOTOR BOATING.

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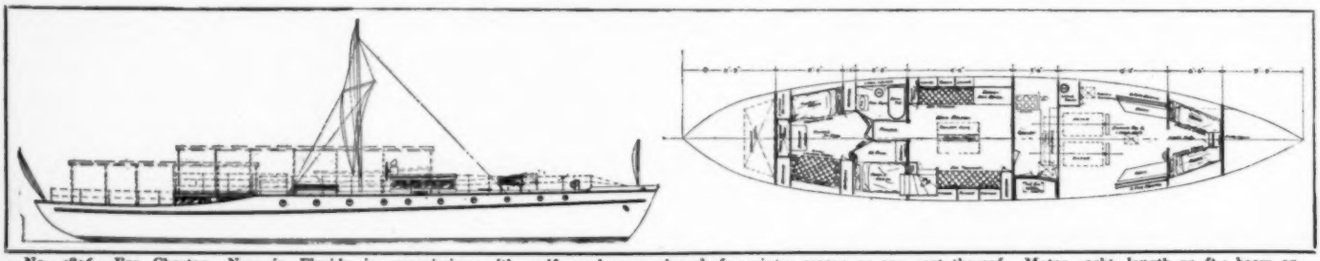
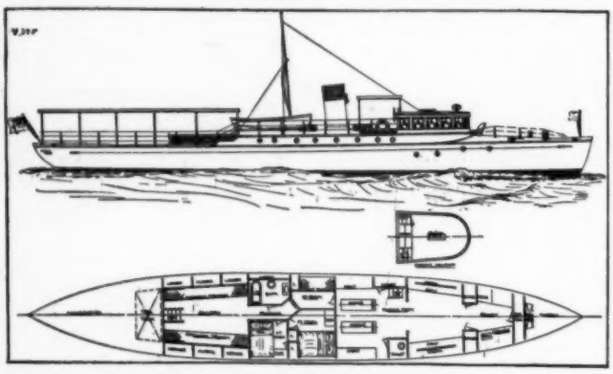
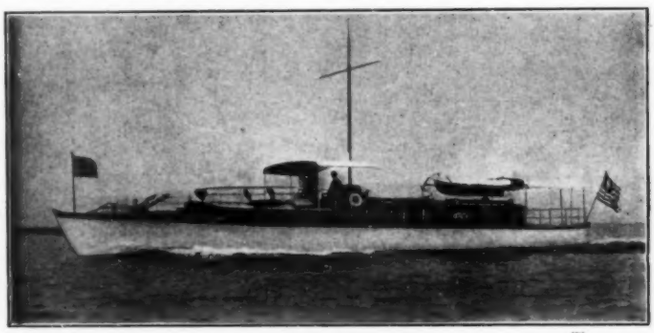


No. 2816.—For Charter.—Now in Florida in commission with uniformed crew aboard, for winter season or any part thereof. Motor yacht, length 75 ft.; beam 17 ft.; draft 3 ft. Twin-screw. Electric light plant. Splendid condition. Excellent accommodations.



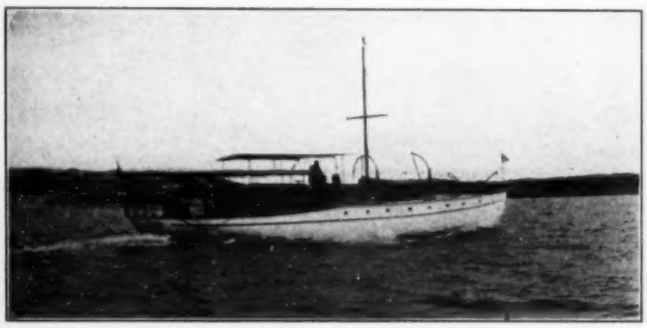
No. 2813.—Very desirable speedy motor yacht; 92 ft. x 12 ft.; twin-screw; Sterling motor; in commission.

Please mention MOTOR BOATING.



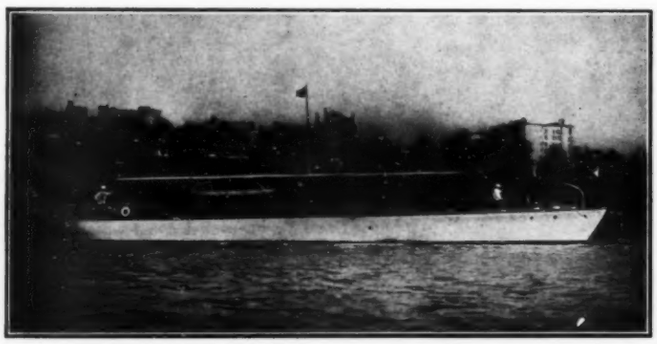
No. 2809.—For Sale or Charter.—Motor cruiser; 75 ft. x 14 ft. x 4 ft.; Standard motors; three state rooms; electric light. In commission.

Please mention MOTOR BOATING.



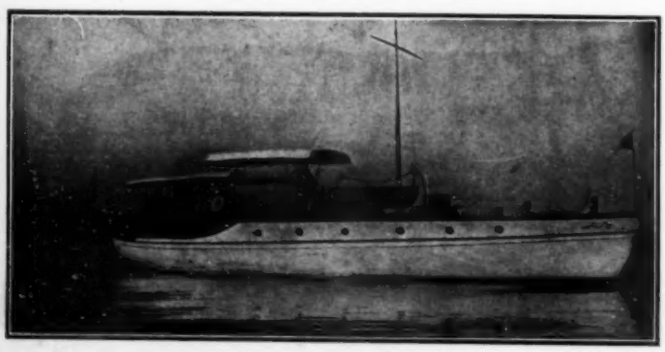
No. 2667.—Sale.—One of the finest 65 footers built. An opportunity to obtain a splendid boat.

Please mention MOTOR BOATING.



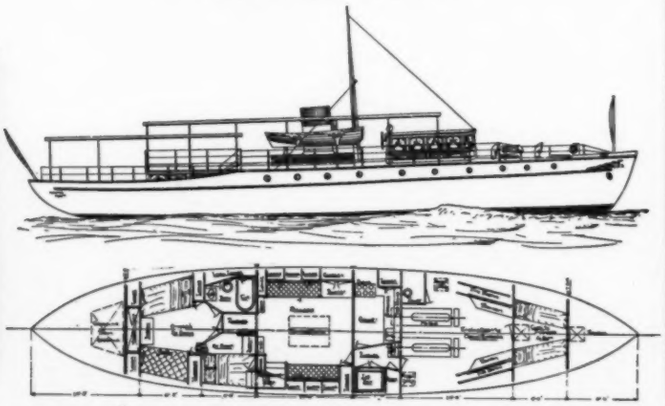
No. 2776.—High speed motor yacht; sale; 92 ft. x 12 ft.; speed 16 to 18 miles per hour; electric light; first class condition.

Please mention MOTOR BOATING.



No. 2596.—For Sale.—Price low to immediate purchaser; 55 ft. x 11 ft.; double stateroom, suite 6; Standard motor.

Please mention MOTOR BOATING.



No. 2804.—Charter for winter.—Motor cruiser; 75 ft. x 15 ft.; electric light; suitable for Southern cruising; in commission.

Please mention MOTOR BOATING.

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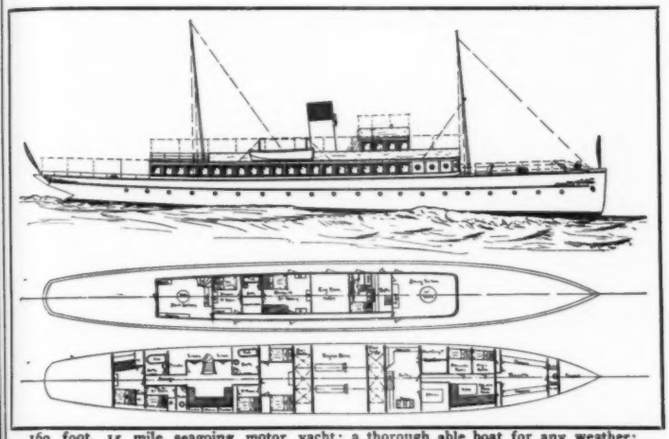
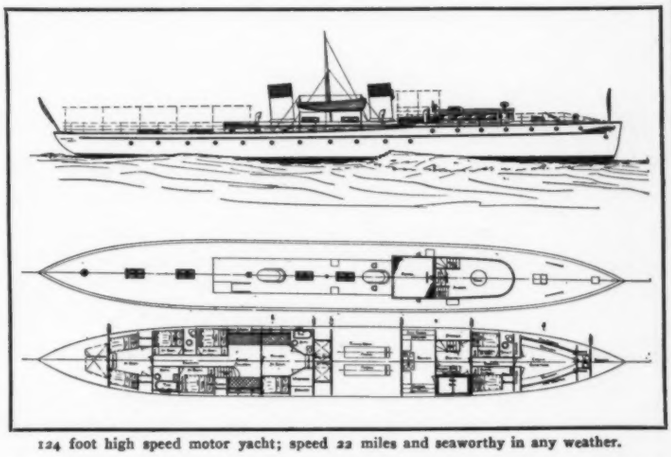
Below we show some of the various types of new yachts lately designed. These designs have been based on experience of previous boats that have been built and successfully tried out. In the space below it is impossible to show all of the various types that we have developed, but we shall be glad to submit designs and estimates of cost and construction on any types shown or others that we may have already developed.

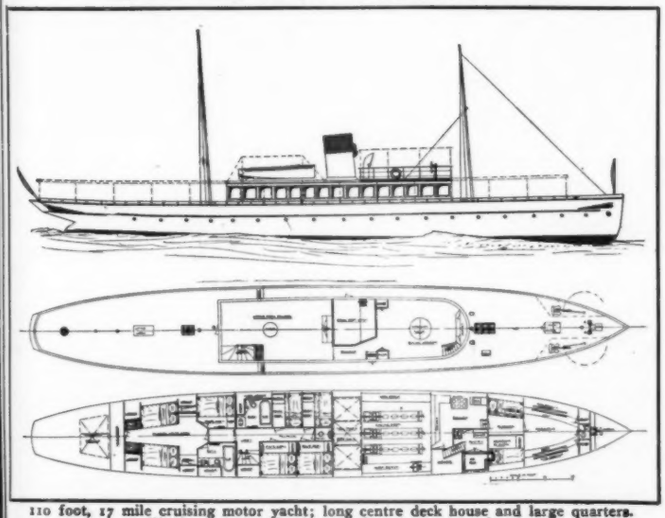
Correspondence is solicited



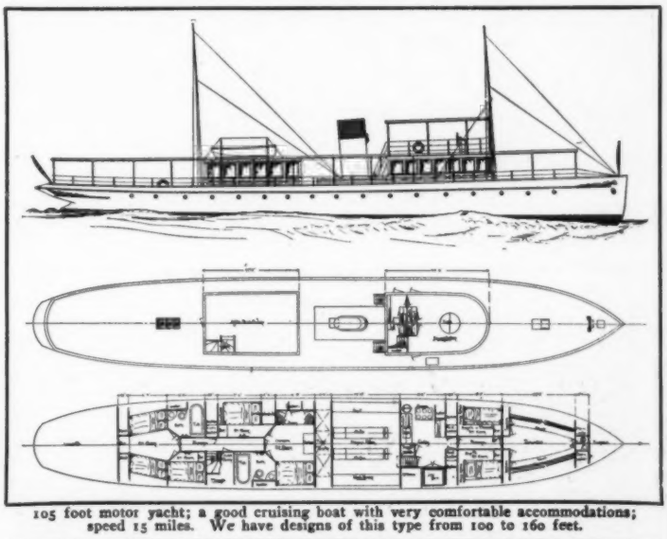
160 foot, 15 mile seagoing motor yacht; a thorough able boat for any weather; large chart house and bridge; owner's quarters on main deck.



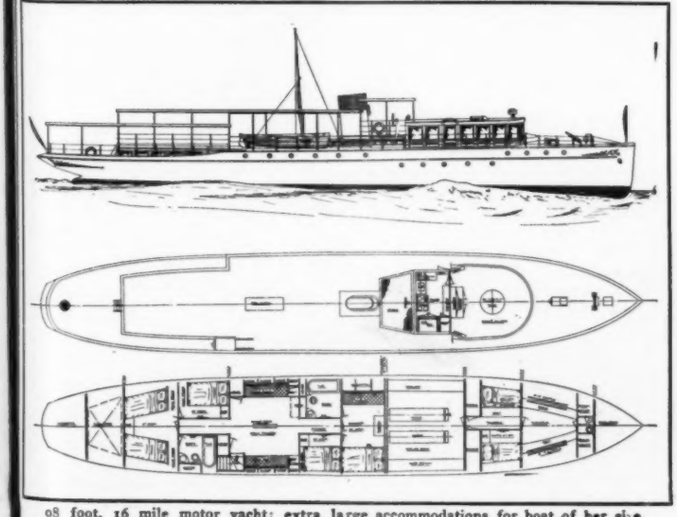
124 foot high speed motor yacht; speed 22 miles and seaworthy in any weather.



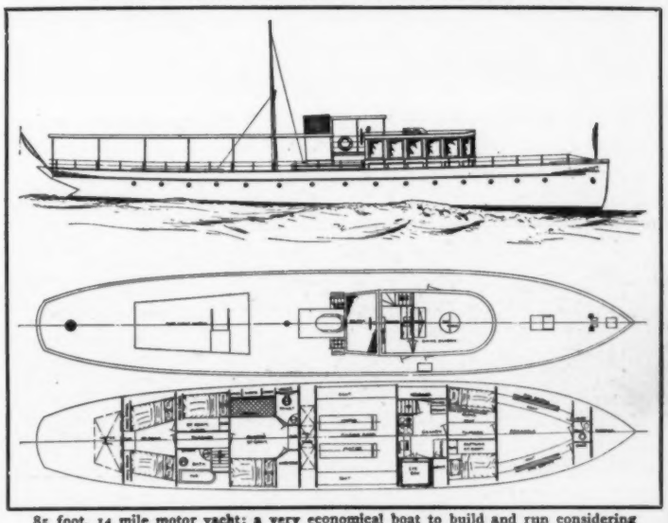
110 foot, 17 mile cruising motor yacht; long centre deck house and large quarters. We have designed this type from 90 to 175 feet.



105 foot motor yacht; a good cruising boat with very comfortable accommodations; speed 15 miles. We have designs of this type from 100 to 160 feet.



98 foot, 16 mile motor yacht; extra large accommodations for boat of her size. We have designs of this type from 90 to 140 feet.



85 foot, 14 mile motor yacht; a very economical boat to build and run considering her accommodations. We have designs of this type from 80 to 150 feet.

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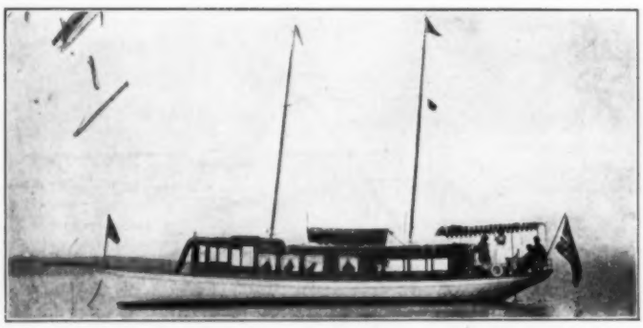
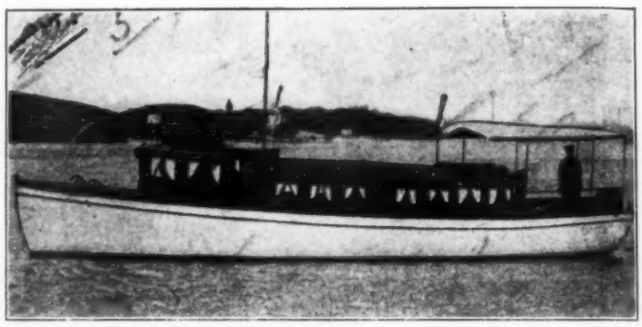
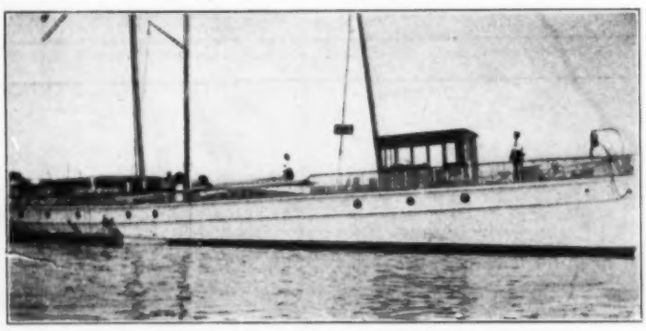


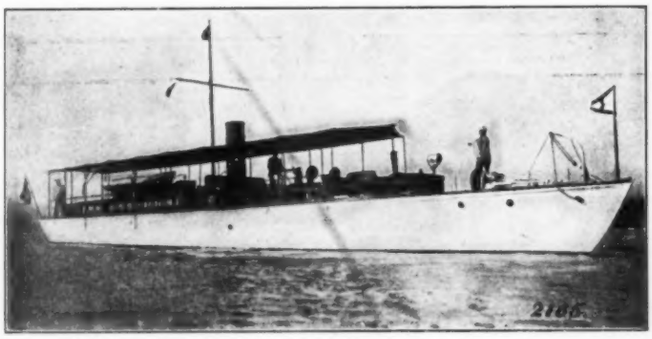
No. 1.—52 x 11½ x 3; 25-35 H. P. Standard motor; price $2,500.00.
Please mention MOTOR BOATING.



No. 5.—40 x 9½ x 3; built 1910; 30 H. P. 20th Century; $3,000.00.
Please mention MOTOR BOATING.

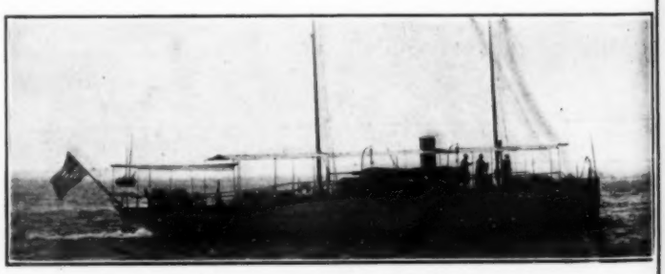


No. 2.—100 x 17½ x 4½; Globe engine, particularly adapted for fishing boat; asking $7,000.00.
Please mention MOTOR BOATING.

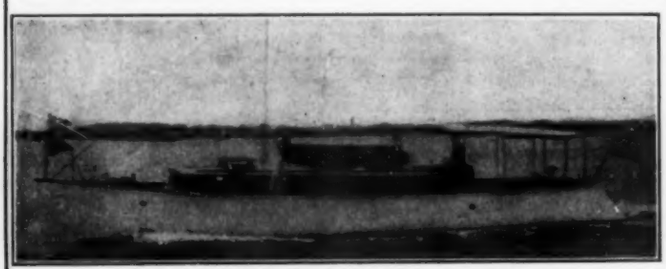


No. 6.—91 x 12½ x 3; built by Jacobs, City Island; two 60 H. P. Craig engines; $10,000.00.
Please mention MOTOR BOATING.

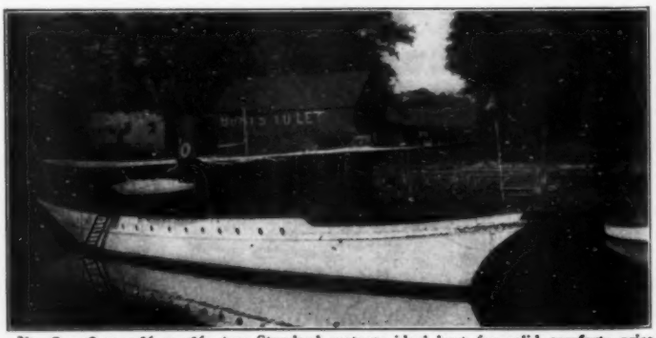
No. 3.—55 x 11½ x 3; built 1910 by Seabury; 60 H. P. Speedway engine; in commission; $6,500.00.
Please mention MOTOR BOATING.



No. 7.—85 x 15 x 3½; built 1911; 100 H. P. Standard engine; offer wanted.
Please mention MOTOR BOATING.



No. 4.—55 x 10 x 3½; 30 H. P. Craig engine; $4,000.00.
Please mention MOTOR BOATING.



No. 8.—98 x 13½ x 5½; two Standard motors; ideal boat for solid comfort; price $7,500.00.
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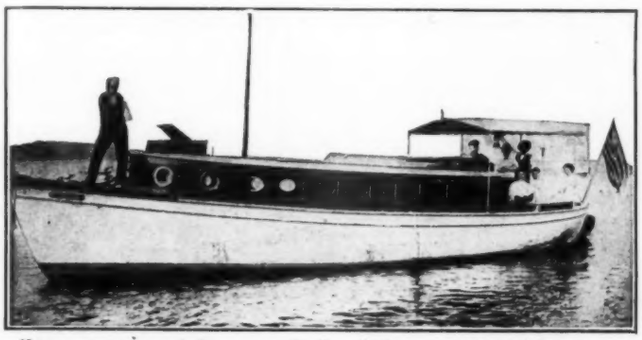
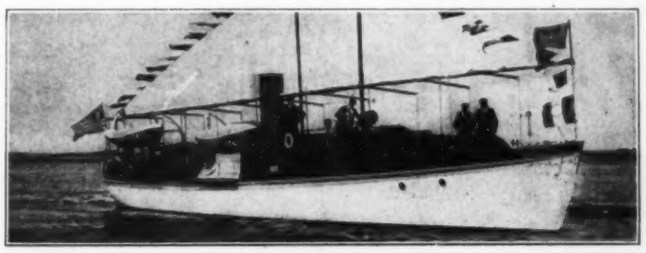
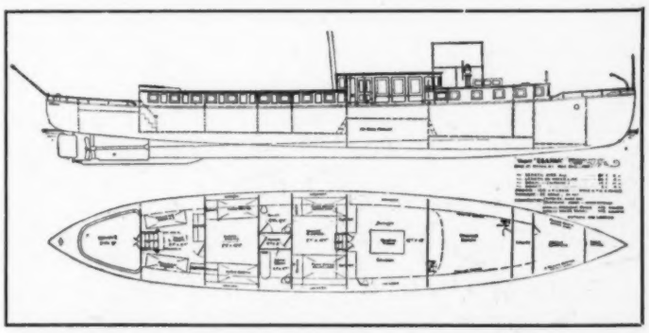


No. 9.—40 x 9 x 3; built 1910; 20 H. P. 20th Century engine; price $2,000.00.
Please mention MOTOR BOATING.



No. 13.—93 x 13½ x 4; built by Electric Launch Company; two 100 H. P. Standard motors; offer wanted.

No. 10.—75 x 14 x 4; 75-90 H. P. Standard engine; asking $13,000.00.
Please mention MOTOR BOATING.



No. 14.—87 x 15 x 5½; 150 H. P. Craig engine; speed 15 miles; asking $12,500.00.
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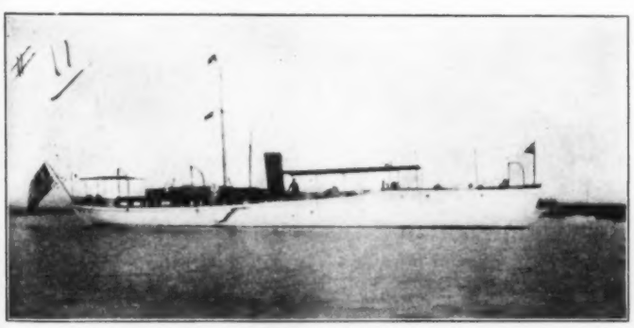
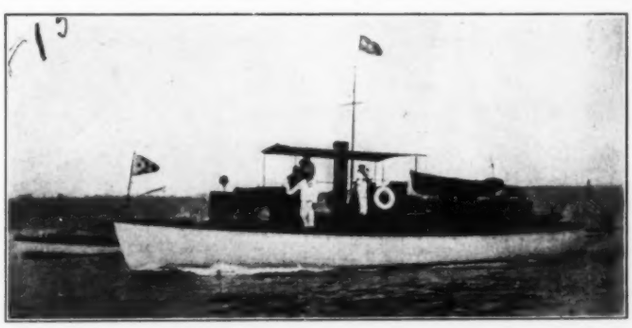
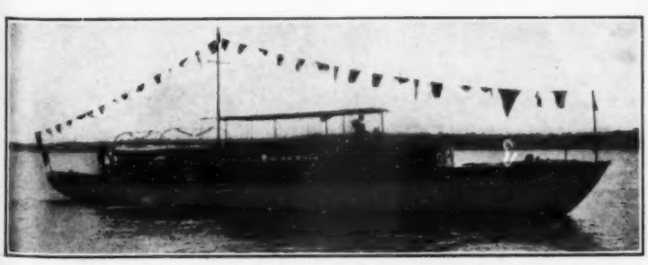


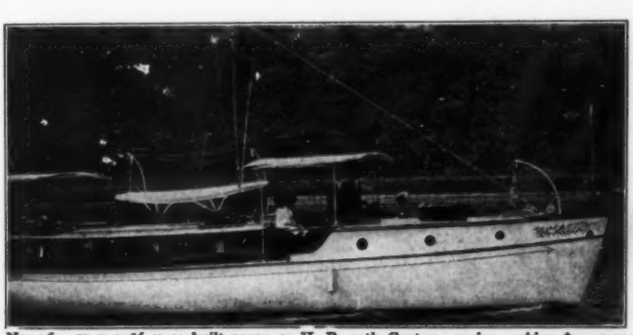
No. 11.—100 x 17 x 4½; built late 1909; 150 H. P. Craig engine; any fair offer considered.



No. 15.—55 x 11½ x 30; 40 H. P. Jager engine; speed 12 miles; for quick sale, $4,000.00.



No. 12.—90 x 15 x 5; two 70 H. P. Craig; price $10,000.00.
Please mention MOTOR BOATING.



No. 16.—57 x 12½ x 3; built 1909; 50 H. P. 20th Century engine; asking $7,000.00; consider offer.
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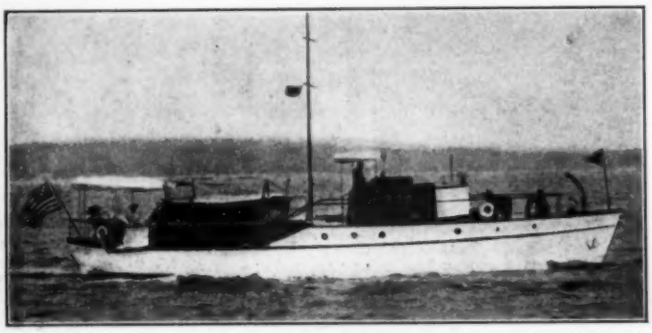
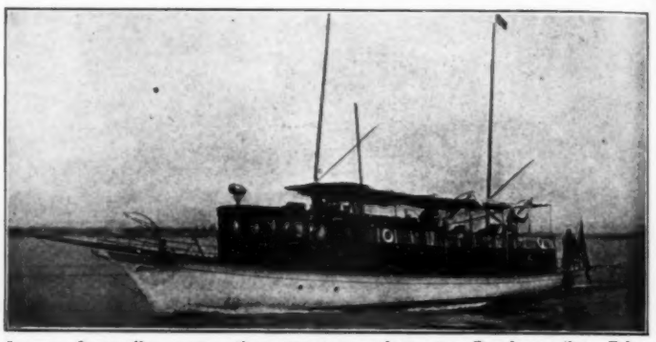
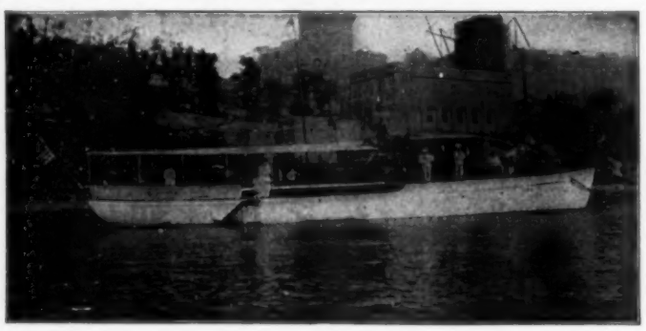


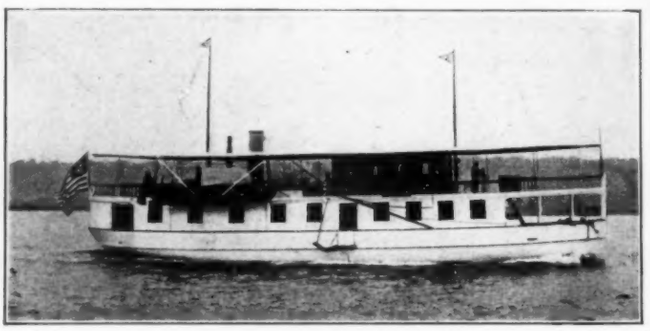
1137.—Twin-screw, 60 ft. Three staterooms, dining and main saloons. Speed 12 miles. *Please mention* MOTOR BOATING.



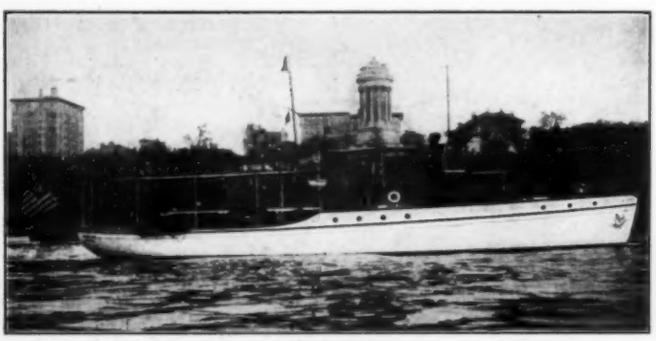
827.—75 ft. gasoline cruiser; three staterooms, saloon, etc. Speed 12 miles. Price attractive.



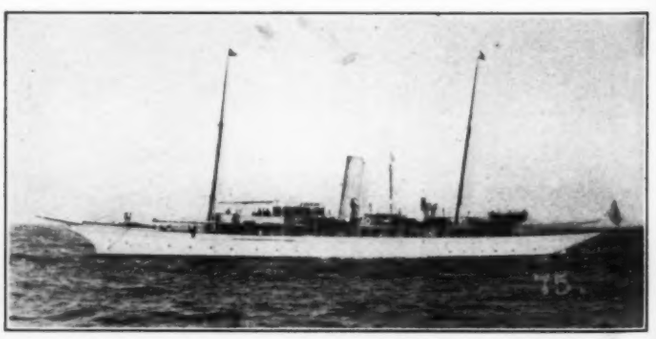
1028.—Sale at a low figure, 80 ft. gasoline cruiser. Two staterooms, saloon. Speed 15 miles.



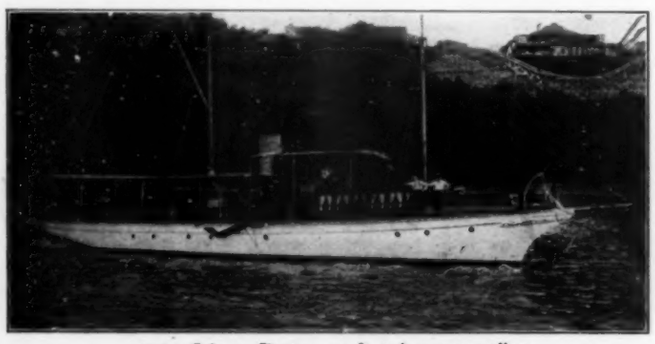
3843.—Sale or Charter.—Twin-screw houseboat. *Please mention* MOTOR BOATING.



1238.—75 ft. twin-screw cruiser; three staterooms, dining saloon, bath. Speed 14 miles. *Please mention* MOTOR BOATING.



3083.—Sale.—200 ft. ocean-going steam yacht. Splendid accommodation. Price attractive.



1093.—Sale or Charter.—90 ft. twin-screw gasoline.

3068.—Steel steam yacht, 130 ft. Practically new.

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OFFICES: 328 CHESTNUT STREET, PHILADELPHIA

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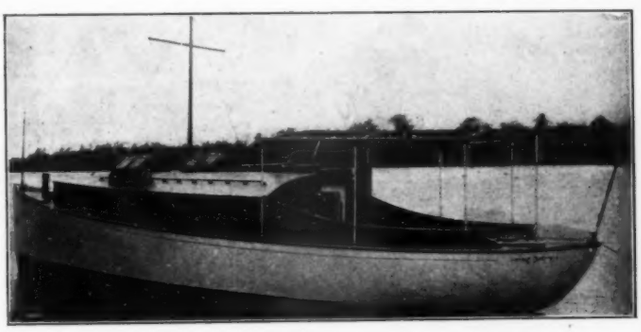
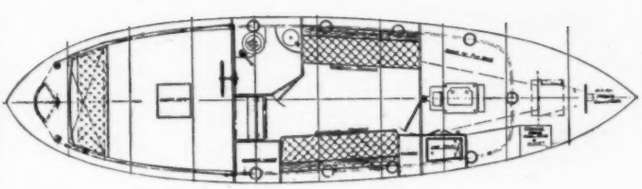
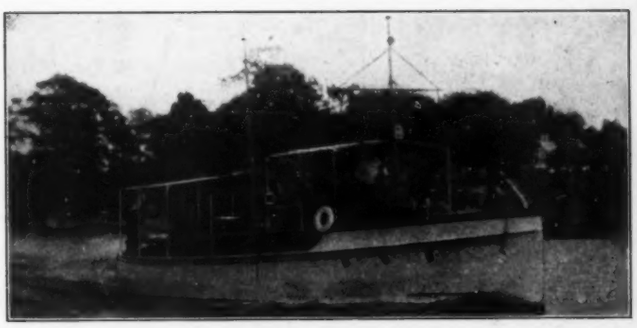
The Brokerage Department offers a complete list of yachts and working vessels. It has on file photographs, plans and descriptions of all the available boats now on the market. Boats known to be unsound will not be handled.

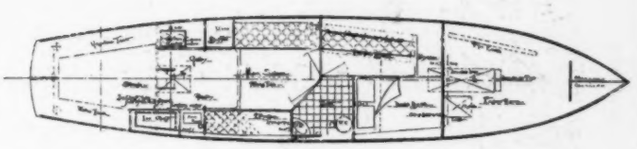




"TILLY"

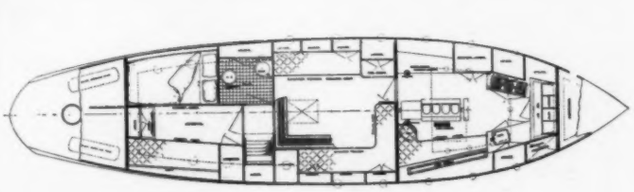
Ideal one-man cruiser, 35 ft. 6 in. x 9 ft. 6 in. x 3 ft. 3 in. New 20 H. P. Ralaco. Speed 10 miles.





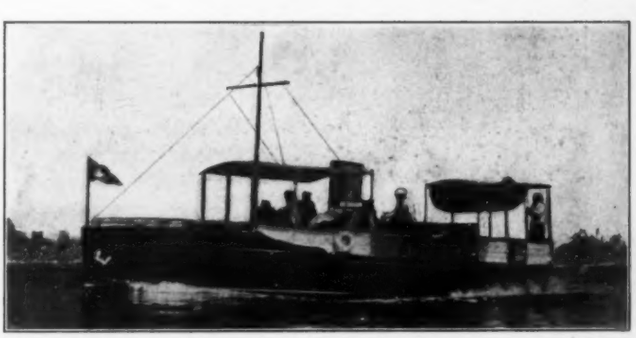
"SERENITY"

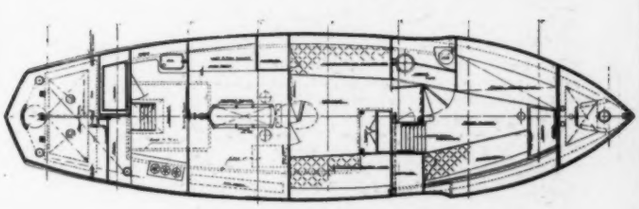
Shoal draft cruiser, 43 ft. x 9 ft. x 2 ft. 10 in. Stateroom, saloon, toilet room, galley, crew's quarters, engine room; 50 H. P. Jencick motor; speed 14 miles.



"HALF MOON"

Fine seaworthy cruiser, 45 ft. 8 in. x 11 ft. x 3 ft. 6 in. Mahogany finish. 25 H. P. Pearl motor. Speed 11 miles.





"BEDOUIN"

Roomy shoal draft cruiser, 40 ft. x 11 ft. x 3 ft. 3 in. New 30 H. P. Loew-Victor motor. Speed 10 miles.

A. J. McINTOSH YACHT AGENCY

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Motor Boats---Steam---Houseboats

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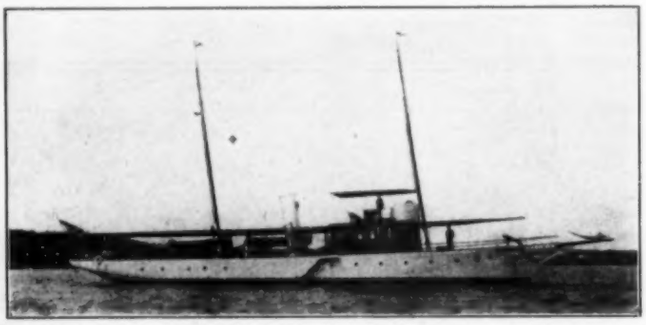
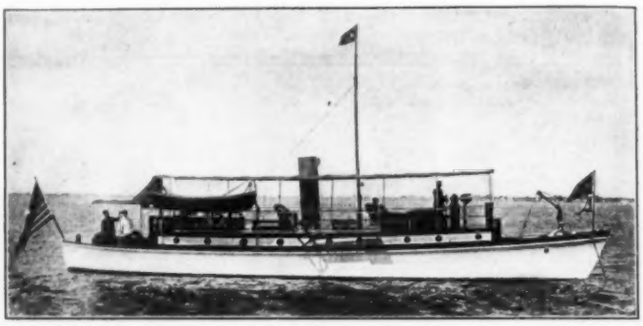
LET US KNOW YOUR REQUIREMENTS AS WE FEEL CONFIDENT WE CAN FILL SAME.

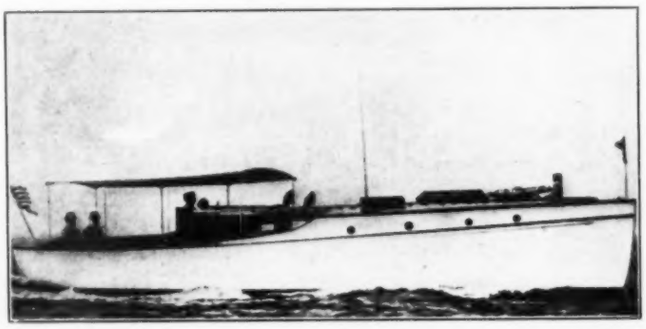


No. 1205.—Ocean going steam yacht, 105 ft. long; any reasonable offer considered. *Please mention* MOTOR BOATING.

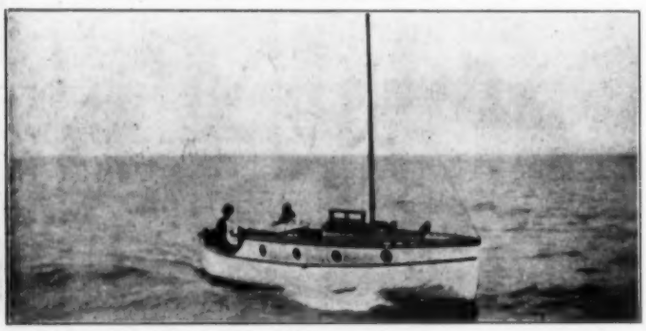


No. 1061.—65 ft. cruising yacht, elegantly equipped. 100 H. P. Standard engine. *Please mention* MOTOR BOATING.

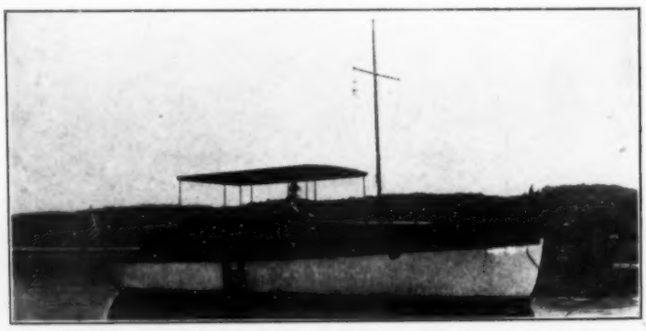
No. 1204.—Auxiliary schooner, 58 x 10.6 x 4.6 ft. 25 H. P. Murray & Tregurtha engine. Price very attractive.



No. 1163.—40 ft. raised deck cruiser, a very attractive boat with a 16-20 H. P. Standard engine.



No. 931.—25 ft. raised deck cruiser, at very low price. 15 H. P. engine. *Please mention* MOTOR BOATING.



No. 903.—40 ft. cruiser, at bargain price. 25 H. P. Lozier motor. *Please mention* MOTOR BOATING.

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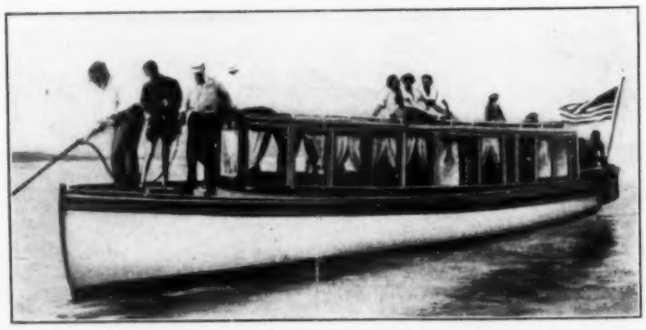
We beg to announce that our list of desirable and high-grade steam yachts, motor boats and auxiliaries is complete and up-to-date, and we are in a position to render excellent service to any one requiring anything in this line.

We also have excellent facilities for handling Marine Insurance, including liability for damage in case of accident.

A. J. McINTOSH YACHT AGENCY,
32 Broadway, New York.

Please mention MOTOR BOATING.



No. 339.—42 ft. glass cabin, 20 H. P. Murray & Tregurtha engine. Boat in fine condition.

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AVE. A., BAYONNE, N. J.

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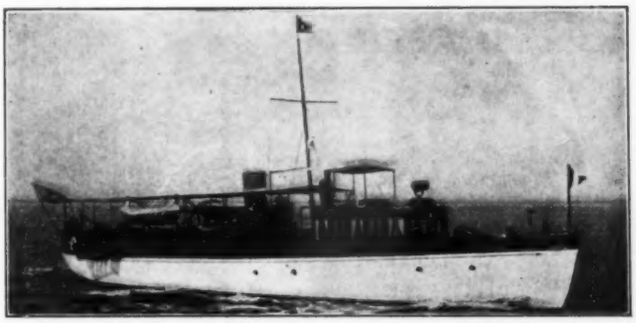
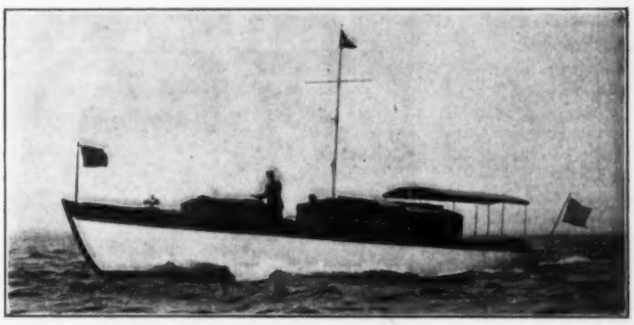
These boats can all be seen at our works, and the purchase made directly from us



No. 1.—75 ft. ELCO MOTOR YACHT. Built 1911. Standard engine. Speed 12 miles. Full inventory.



No. 2.—54 ft. ELCO DE LUXE. Self-starting Standard engine. Speed 16 miles.
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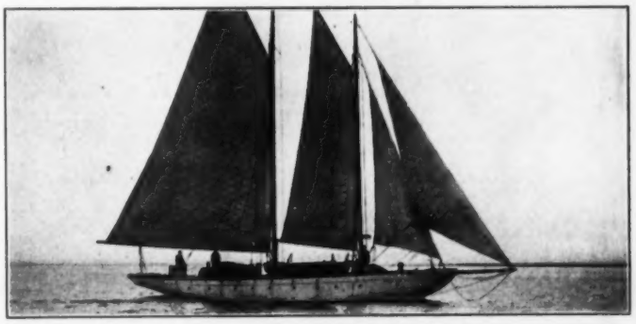
No. 3.—36 ft. ELCO CRUISER. Bridge deck. Accommodations aft. Engine and galley forward. A-1 condition. Speed 12 miles.
Please mention MOTOR BOATING.



No. 4.—60 ft. AUXILIARY SCHOONER. Beam 16 ft. Built by ELCO, 1909. Exceptionally strong and seaworthy.
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No. 5.—35 ft. ELCO EXPRESS. Six-cylinder ELCO engine. Speed 24 miles. Thoroughly overhauled.

No. 6.—28 ft. ELCO EXPRESS. Four-cylinder ELCO engine. Speed 20 miles.
Please mention MOTOR BOATING

No. 7.—37 ft. OPEN GASOLINE LAUNCH. Splendid mahogany hull, large carrying capacity. Four-cylinder engine. Speed 12 miles. Bargain.

No. 8.—20 ft. ELCO-PLANE. Built 1912. Speed 35 miles. Perfect condition.
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Hydroplanes, Runabouts, Yacht Tenders, Cruisers. Reliance-Continental Motors—Best in the World

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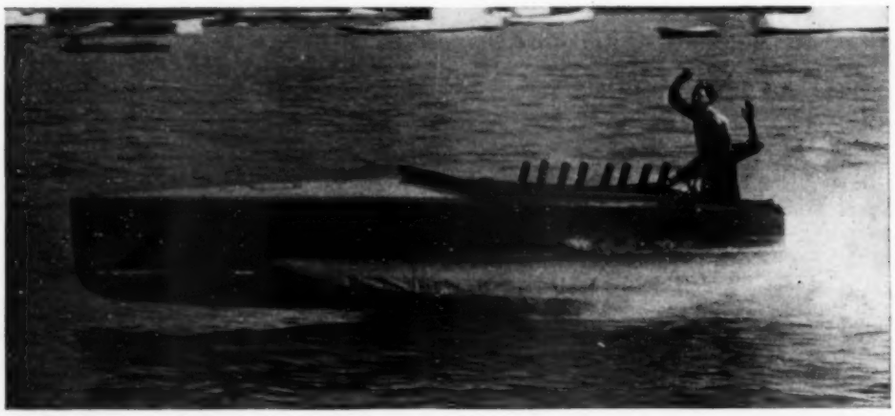

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Best of all the Hydroplanes. Two water-tight compartments; double planked bottom; batten seamed throughout. Construction absolutely best. Perfect condition.

New York Sun said she frightened all competitors out of National Carnival except Tech, Jr., which made fastest mile in the world; and she beat Tech.

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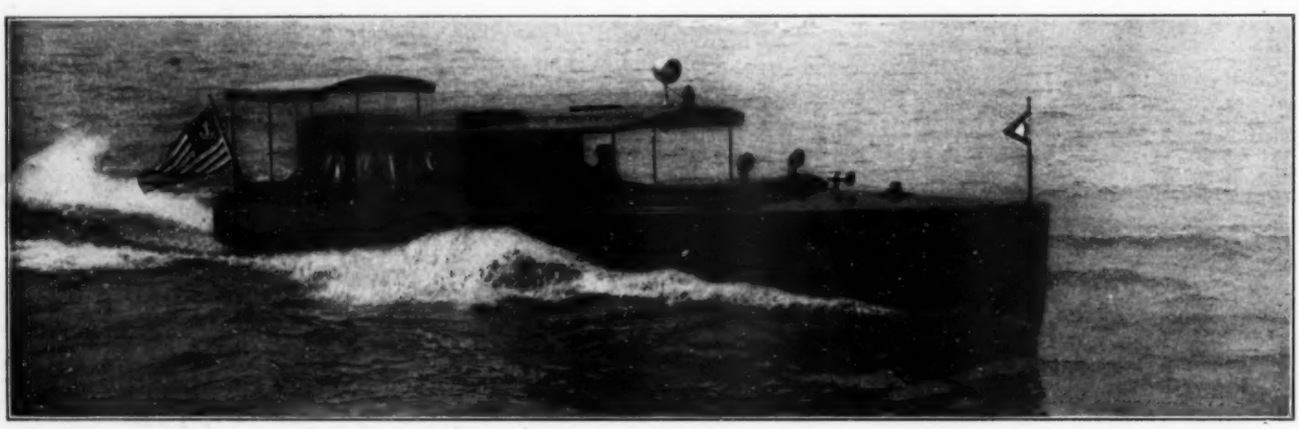

For Sale—Peter Pan, Sr. A day cruiser.

40 ft. x 7 ft. 9 in.; magnificent mahogany; twin screw; 100 H. P.; two 50 H. P. Reliance-Continental motors; one-man control; every kind of appointment; cabinet for wines, silver, glasses, etc.; enclosed toilet room and lavatory; running water; Pullman berth; electrically lighted throughout; splendid sea boat. Speed 20 miles. Has had practically no service and equal to brand new in every respect. Winner National Championship, also Long Distance Race, New York to Peekskill and return.

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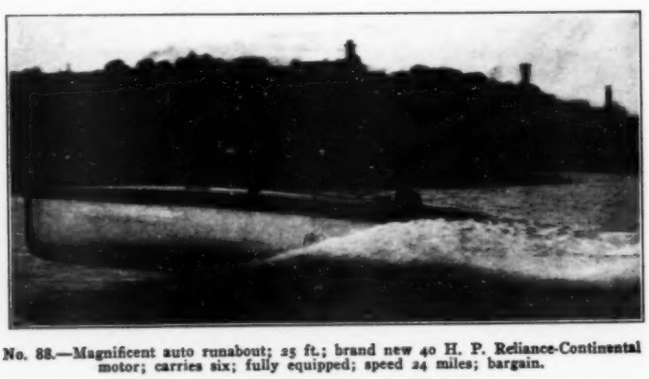
No. 77.—New auto speed runabout, 21 x 4 ft. 6 in.; speed 18 miles; 20 H. P. Reliance motor; very high class; carries six; all appointments. Less than factory cost.

Please mention MOTOR BOATING.



No. 88.—Magnificent auto runabout; 25 ft.; brand new 40 H. P. Reliance-Continental motor; carries six; fully equipped; speed 24 miles; bargain.

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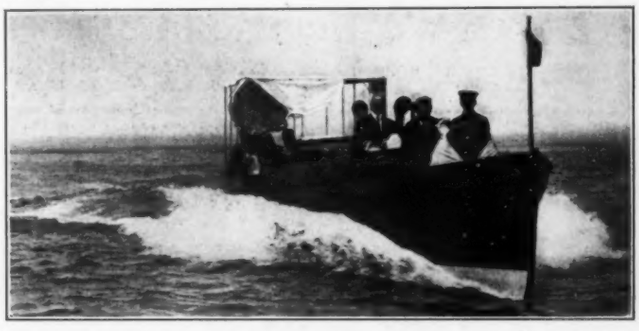
No. 1637.—76 ft. x 56 ft. 10 in. x 15 ft. 4 in. x 9 ft. 4 in.; the highest type of yacht; very luxurious below decks; large saloon; large double stateroom; single stateroom, bath room, etc.; perfect condition.

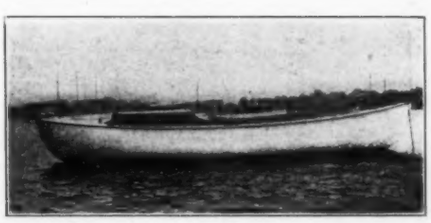


No. 1176.—45 x 7.9 x 2.3, mahogany throughout, speed 22 miles. Designed and built by Stearns & McKay Co.

No. 1836.—Auxiliary schooner, 88 x 62 x 18.4 x 8.6; 5 staterooms; 50 H. P. motor.

No. 1438.—62 x 41 x 12.2 x 9; 2 staterooms.

No. 1642.—Fast V bottom launch, 22 ft. x 4 ft. 6 in. x 3 ft. draft; 10 H. P. motor; complete equipment; auto control, spray hood, etc.; seats 4 people; speed 15 miles.



No. 1348.—25 x 30 launch, plain or mahogany finish.

No. 1830.—23 ft. launch, mahogany and cedar; 5 H. P. motor.

Nos. 1583-1672-1751-1067.—21 ft. cabin knockabouts; $100-$600.
No. 1798.—Cruising yawl, 42 x 32 x 10 x 7.4; $1,500.

No. 1347.—Cruising sloop, 41.6 x 26 x 10.6 ..... $1,200
No. 1532.—21 ft. launch 250
No. 1583.—17 ft. fast runabout $500
No. 1567.—18 ft. cabin knockabout 300

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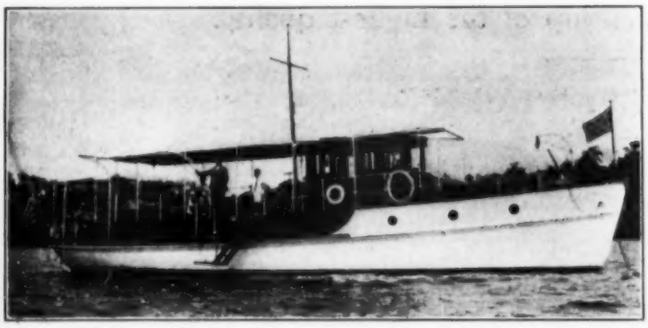
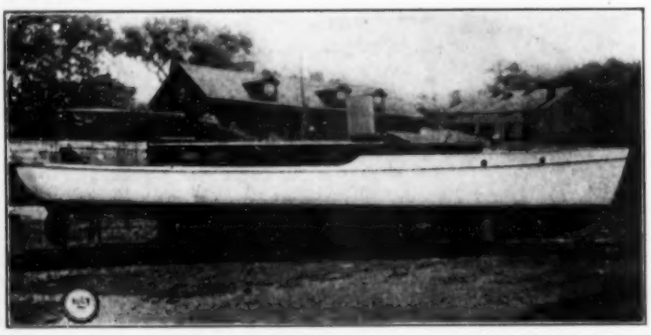
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars mailed on request.

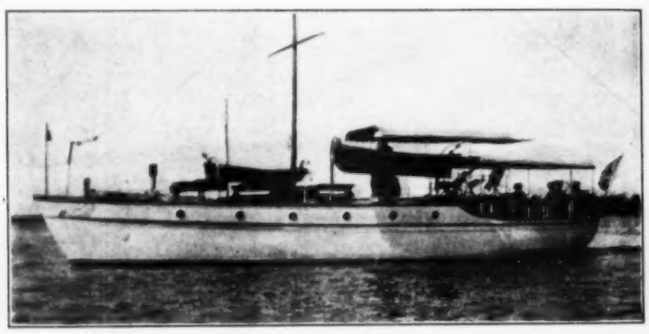


No. 1592.—Bargain.—Raised deck cruiser; 60 x 12 x 4 ft.; recent build; speed 10-12 miles; two double staterooms, saloon, bath, etc. Cox & Stevens, 15 William St., New York.

No. 470.—For Sale.—Raised deck cruiser, 60 x 12 x 3.6 ft. draft; 40 H. P. Lamb motor; speed 11 miles; 2 staterooms, saloon, etc. Cox & Stevens, 15 William St., New York.

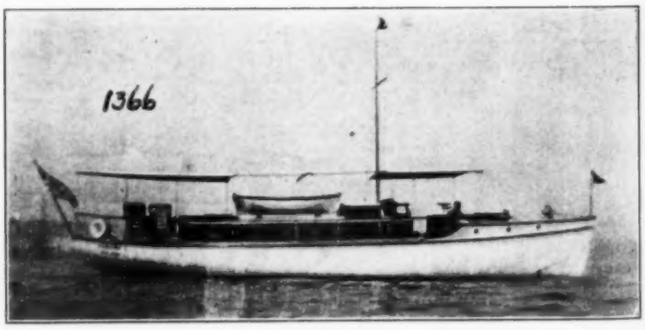


No. 1467.—For Sale.—Lawley built cruiser; 53 x 11 x 3.6 ft.; built 1911; speed 12-13 miles; double stateroom, saloon, separate galley, electric lights, etc.; exterior finish of teak; interior mahogany; probably best craft of type and size afloat. Cox & Stevens, 15 William St., New York.

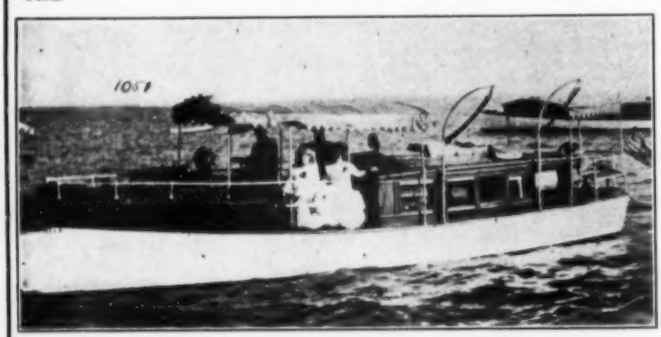


No. 555.—For Sale.—Raised deck cruiser; 55 x 11.6 x 3.6 ft. draft.; 24 H. P. motor; speed 10 miles; double stateroom, saloon, galley, etc. Cox & Stevens, 15 William St., New York.

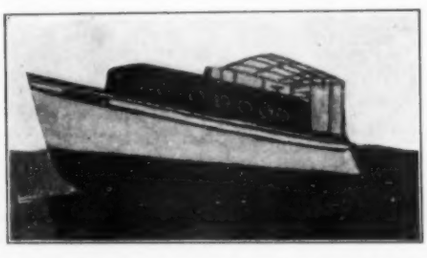
No. 982.—For Sale.—Bridge deck cruiser; 50 x 10.6 ft.; launched August, 1910; speed 12 miles; double stateroom, saloon, etc. Cox & Stevens, 15 William St., New York.



No. 1366.—For Sale.—Bridge deck cruiser; 50 x 11 x 3 ft. 6 in. draft; built 1910; 30-45 H. P. 20th Century motor; speed 11 miles; saloon, stateroom, toilet room and galley; bargain; Cox & Stevens, 15 William St., New York City.



No. 1051.—For Sale.—Bridge deck cruiser located in Southern waters; 39 x 10 x 2 ft. 6 in. draft, equipped with 40 H. P. Lamb motor; built in 1909; completely controlled from bridge; main saloon 14 ft. long with 4 extension berths, also toilet, galley, etc.; fully found for cruising; in excellent condition; bargain for immediate sale. Further particulars from Cox & Stevens, 15 William St., New York.



No. 1907.—For Sale.—Trunk cabin cruiser, 33 x 28 x 7 ft. 6 in. x 2 ft. 6 in. draft; built in 1909 by New York Yacht Launch & Engine Co. and equipped with 20th Century engine; speed 12 miles; interior finished mahogany; toilet and galley; in excellent condition bargain. Apply Cox & Stevens, 15 William St., New York.

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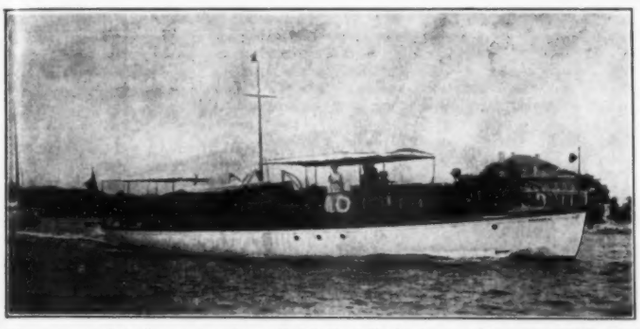
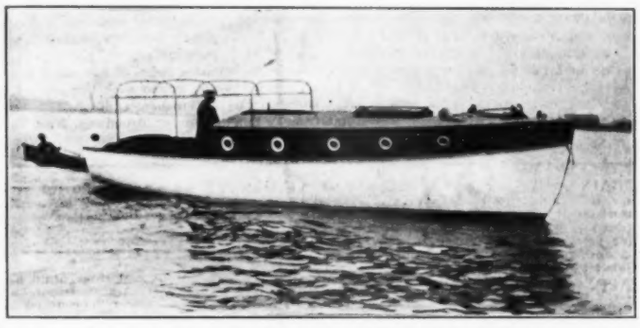
Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.

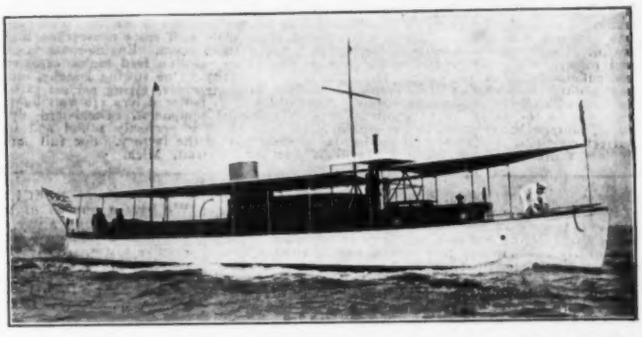


No. 349.—70 ft. twin-screw cruiser. G. W. Ford Yacht Agency, Davenport Neck, New Rochelle, N. Y. Phone 1325. All type yachts listed.

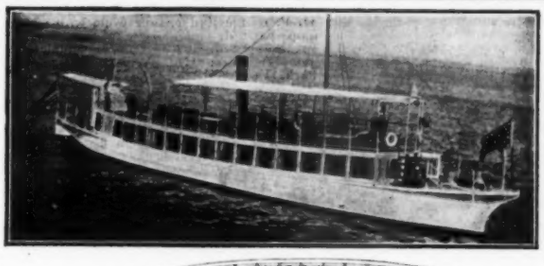
No. 348.—85 ft. cruiser, Standard motor. G. W. Ford Yacht Agency, Davenport Neck, New Rochelle, N. Y. Phone 1325. All type yachts listed.

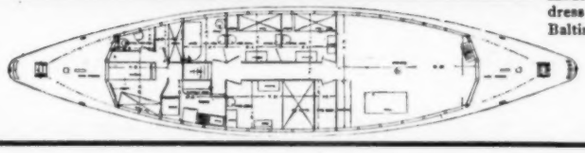


No. 367.—33 ft. cruiser, new 1911. G. W. Ford Yacht Agency, Davenport Neck, New Rochelle, N. Y. Phone 1325. All type yachts listed.



No. 327.—87 ft. cruiser, best condition. G. W. Ford Yacht Agency, Davenport Neck, New Rochelle, N. Y. Phone 1325. All type yachts for sale.





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Through winter months now in Chesapeake Bay. Is admirably adapted for Southern waters—80 feet long x 18 feet beam with all the conveniences of a city apartment—running water and acetylene gas in all staterooms—large saloon and promenade under awnings. This boat can be run with two men at low cost, and has far more accommodations and comfort than a yacht twice the size. Moderate rental to responsible party. Address Mr. J., 1426 W. Baltimore St., Baltimore, Md.

PRICE $680.00.

30 ft. x 8 ft. x 3 ft.; 14 H.P. Fairbanks; very strong and substantial, no fancy woods; Edison storage batteries; Rushmore searchlight, etc. Exceptionally complete; small boat. Owner leaving water. Price less than equipment. Must sell at once, can store until Spring. Address for further particulars—

W. L. EDISON, Salisbury, Maryland.

We are the only firm building 25-foot cruisers for $850, including electric lights, toilet, galley, and complete equipment. Order now for spring delivery. Larger cruisers at proportionate prices. Write for literature. Howard Cruiser Works, Westfield, N. Y.

FOR SALE—A DIXIE JR. HYDRO,

built 1912 and in first class condition. Has made over 40. Used very little. Owner has no further use. May be seen and tried by appointment. Address L. M., care of MOTOR BOATING.

Twin Screw Engines at a bargain. 1911 models in 8, 12 and 20 h.p., 2 and 3 cylinders, complete with magneto and reverse gears. Finest running 2-cycle on the market. Address Black Rock Machine Co., Bridgeport, Conn.

FOR SALE: Boat building and repair shop, fully equipped 24 x 76 ft. Marine Railway, good location, no opposition. For particulars address: Fletcher Boat Works, Houghton Mich.

WANTED—Old discarded boat, 25 to 40 feet long with or without power, low price. Box 2, care of Motor Boating.

ENGINE WANTED, five to fifteen horse. Harry Fellinge, 612 Woodland, Kansas City, Mo.

FOR SALE: New twenty foot Hydroplane; speed 23 miles, 4 cylinder engine, Presto self-starter, auto control. Great Bargain. Box 171, Leclaire, Iowa.

FOR SALE.

35 FT. ELCO EXPRESS, 1911, BUILT ENTIRELY OF MAHOGANY, COST LAST YEAR SOMETHING IN EXCESS OF $4,100; GUARANTEED SPEED 24 MILES; IN PERFECT CONDITION. PRICE $2,500 NET. ADDRESS

LAWRENCE JONES, LOUISVILLE, KY.

NEW 54 H. P., six-cylinder Elbridge engine, just from factory. Aluminum manifolds, base and cylinder heads, extra finish throughout. Built for Mr. Coleman du Pont of Wilmington, Del.; exchanged for a larger power. Price $700. Emerson Engine Co., Alexandria, Va.

WELDING.

Cracked Cylinders and all Broken Castings in any Metal SECURELY Welded and GUARANTEED at about one half the cost of a new part. NATIONAL Welding & Mfg. Co., Incorporated, 527 Jackson Boulvd, Chicago, Ill

CANADIANS, Second-hand engine bargains. Send for list. Guarantee Motor Company, 73 Bay Street, North, Hamilton, Ont., Canada

USE "SNAPPER" ENGINES for your small boats. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

SCORED cylinders repaired, $12. No enlargement of bore—no need for new pistons and rings. Send piston with cylinder. Absolutely reliable method. References, testimonials and full details on request. Waterbury Welding Company, Waterbury, Conn.

CASH F. O. B. CINCINNATI.

The BILLIKEN, sister boat of MARY LEE, 40 ft. x 5 ft. 2 in. No engine. Hull all Spanish cedar with complete equipment; excellent condition. Never used. Write for specifications and particulars, lowest cash price.

One 3-cylinder Hertz, timer	$2.50
One 3-cylinder Long, timer	2.00
Two 40 lb. galvanized yacht anchors, Michigan wheel, each	4.00
One 6-arm grappling hook, galvanized	1.00
Two 3-cylinder K.W. dash coils, in mah. box, each	10.00
Two Grey-Hawley dash control levers, with angles, ea.	3.00
One 10 in. x 36 in. galvanized welded steel tank	5.00
One 8 in. x 30 in. galvanized welded steel tank	4.00
One 1½ in. Schebler carbureter	4.00
One 1¼ in. Schebler carbureter	3.00
One ½ in. rotary bronze pump with connecting gears	5.00
One Grey-Hawley 2 in. muffler, galvanized	3.50
One 3 in. polished bronze flush deck plate	1.00
Two polished bronze boat hook ends, each	1.00
100 ft. ¼ in. bronze tiller rope, per ft.	.15
One 1¼ in. universal joint, Michigan wheel	3.00
One 100 ampere hours, 8 volt exide battery	30.00
One 12 volt, 15 ampere, aluminum lighting dynamo, H. B. ball bearings, Robbins & Myers, 900 r.p.m.	30.00
One Lunkenheimer 2 in. quick action gate valve, bronze	3.00
One polished bronze 14 in. steering arm	1.50
Three foot pedals, each	.40
Two 3 gang, flush dash switches, each	2.00
One Whittney volt ammeter, O-25, 25-O-25, for dash, with internal illumination	15.00
One 1½ in. barrel hand bilge pump, brass	2.00
One POPE ENGINE, 4¾ in. x 5½ in., 4 cyl., excellent condition, 35 H.P., with clutch, steering wheel and Delco ignition system	225.00

All of above new, never used, except engine.

P. G. SCHWARZ,

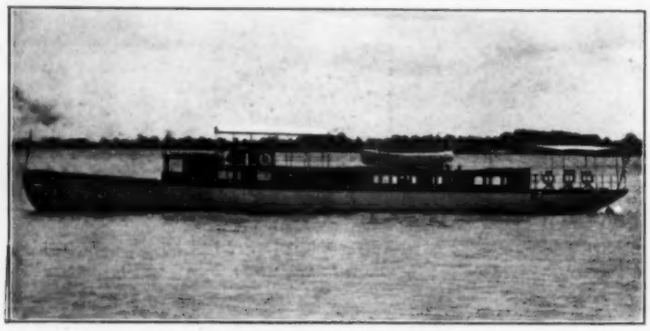
No. 329 Washington Ave., Newport, Ky.

THE MOTOR BOATING MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 3 cents per word. If an illustration is used the charge is as follows, which includes the making of the cut:
Cut one inch deep, one column wide..... $2
Cut 1½ inches deep, 1½ column wide..... $3
Cut three inches deep, three columns wide..... $10

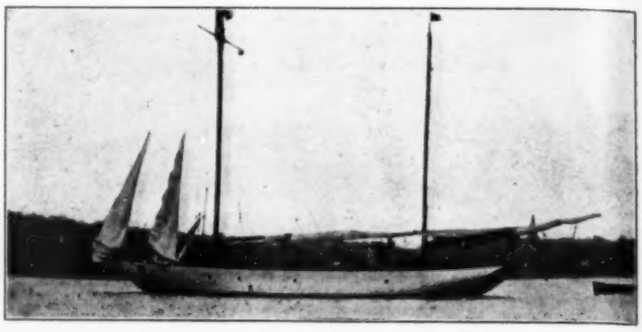
Opportunities for the Motor Boatman

Before you buy or before you sell, examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



YACHT "VIKING."

Length 98 ft.; beam 11 ft.; draft 3 ft. 9 in. Interior woodwork mahogany, in excellent condition. Hull white pine planking. Deck fittings polished brass. Crew's quarters forward, 4 berths. Large main cabin and after-cabin with seats convertible into berths. Large stateroom with full-sized bed. Large toilet room. Engine-room large and roomy. Galley large and equipped complete. Two gasoline feed tanks, capacity 100 gallons each and one storage tank, 400 gallons capacity. One rowing Dinghy, one power dinghy. Three 48 H.P. motors in perfect working order, giving perfect satisfaction, with three independent wheels. Auxiliary 4 H.P. motor drives 110 volt lighting dynamo and large rotary pump. Complete electrical equipment, switchboard, dynamo, storage batteries. Electric search light. The boat is perfectly sound and in perfect condition, looks as good as the day it came out of the factory. For full particulars address W. A. STOCK, 83 West Fort St., Detroit, Mich.



NO. 3303.—For Sale at Bargain Price, or Charter.—Unusually desirable and able auxiliary ketch, built 1910; excellent condition. Adapted for cruising in Northern or Southern waters; 97 feet over all, 20 ft. beam, 5.6 ft. draught; flush deck with cockpit. Murray & Tregurtha 4-cylinder, 40-65 H.P. gasoline engine, giving a speed up to 8 miles. Equipped for cruising. Accommodations consist of two double, two single staterooms, two baths, one of which has a shower, saloon with transoms, sideboard, etc., engine room, galley, etc. Ratsey sails; 2 launches, 1 dinghy. Further particulars, plans and inspection permit from Gielow & Orr, 52 Broadway, New York.

FOR SALE.

Boat and engine works, with full line of machinery and equipment in excellent condition; for manufacture of boats and gasoline engines; buildings in first-class order; size nearly one hundred feet square, two stories, possessing excellent water-front on St. Lawrence River in vicinity of Thousand Islands.

Also complete patterns for high grade two-cycle gasoline motors in sizes ranging from 2 to 120 horse power, from one to six cylinders.

A large business has been conducted at this establishment and the reasons for selling are of a private nature.

This property will be offered at a great sacrifice.

Address all communications to Box 25, care of Motor Boating.

BROKEN PARTS WELDED EXPERTLY AND GUARANTEED.

Why risk sending your broken cylinders and crank-cases to inexperienced and irresponsible welders when you can get expert workmanship, prompt service, and fair prices from an old and responsible firm? Write us for estimates and look up our references. What good is a guarantee unless the firm behind it is reputable and responsible? We refer to Dun, Bradstreet, or any Waterbury bank. WATERBURY WELDING COMPANY, WATERBURY, CONN.

BEST STEEL HULL LAUNCHES.

We build the best zig-zag double riveted steel hulls on the river. Our own original model 30 ft. 16 gauge steel hull pleasure launch is simply a beauty. Finished in hard oiled oak with four cylinder 35 H. P. Northway engine with latest Remy magneto, easily makes 12 miles against and 20 miles with current per hour on Mississippi River. Price complete, without top, $500.00. Other sizes, too.
ROSEDALE MACHINE & SUPPLY CO.,
Rosedale, Miss.

TUTTLE MARINE MOTORS
for Everything from a Canoe to a Cruiser.
20 years' experience—Unlimited Guarantee.
Write for Catalog.
TUTTLE MOTOR CO., 612 State St., Canastota, N. Y.

SPECIAL BARGAINS.

We have a number of brand new fully guaranteed 1912 models over and above our manufacturing schedule for this season. These will be disposed of at unusually attractive prices. Write at once for particulars as the supply is limited. We also have a few foreign makes accepted in trades. These motors have been carefully overhauled and are in first class running order.
3 cylinder, 4 x 4¾, 12-15 H. P. Barber $150.00
4 cylinder, 3½ x 5, 12-15 H. P. Sterling 178.00
THE ROBERTS MOTOR CO.
1501 Columbus Ave., Sandusky, Ohio.

COMPETENT Boat Builder, capable of taking hold of shop and getting out trim, classy, high grade boats; can step into an established business, have complete charge of plant, except selling, which is done at uptown office. An opportunity of a life time for the right man with a little money, who wants to get into business for himself. Will give right man the long end. Give full particulars, age, experience, former connections, etc., in first letter. Shadegg Eng. Co., Minneapolis, Minn.

ONE four-cylinder, four-cycle machine, 5 in. bore, 5 in. stroke, complete with reverse gear, rear starter, Bosch magneto. Machine weighs 550 pounds, new and in perfect condition and one of the best machines made in the country. Would exchange for light touring car. Send replies to M. Supt., Box 723, New London, Conn.

8 CYLINDER, 50 H.P. "V" TYPE ENGINE.
BRAND NEW.
Never left maker's hands. Suitable for aeroplane, auto, or Motor Boat use. Bosch Magneto, Schebler Carbureter. Weight, 300 lbs. Original price $1,500. Will take $600 cash. Quick sale.
A REAL BARGAIN.
RINEK CORDAGE COMPANY, EASTON, PA.

WANTED.—To exchange 40 ft. auxiliary Sloop, modern, perfect in every respect, for about 50 ft. or over, shallow draught schooner, yacht or yawl, must be modern and in first class condition. Will add cash.
A. B. Herle,
756 West 180th Street, New York.

"PATENT ATTORNEYS"—$10.00 each for the names and addresses of persons interested in patents. For particulars address Post Office Box 2343, Washington, D. C.

CYLINDERS REBORED—Pistons and rings fitted, new cranks, connecting rods, cases, transmissions, any part for automobile or motor boat motor reproduced like original. Gear cutting of all kinds and materials. Send old part. The shop of quality. McCadden Machine Works, Minneapolis, Minn.

FOR SALE: Seabury "Speedway" Marine Engine. 18/22 H. P. four cylinder, four cycle with make and break and jump spark, dynamo, shaft, reverse gear, Schebler carburetor, been used. Price $500.00 complete. Cost New $1050.00. Address: Geo. W. Smith, 404 Home Ave., Oak Park, Ills.

FOR SALE—16 H. P., 4-cylinder, 4-cycle Dunn engine, in fine running order. High tension distributor, timer, six-feed oiler and coil. First check for $65.00 gets this bargain. Address W. L. Edison, Salisbury, Maryland.

FOR SALE—Runabout, twenty-five by six. Built nineteen eleven. Twelve horsepower, two-cylinder Eagle engine under hatch, forward; auto control, reverse gear. Sell together or separately. No reasonable offer refused. Box 456, Saratoga Springs, New York.

AUTOMOBILES.

AUTOMOBILE, Marine, Motorcycle Cylinders reground, new pistons and rings fitted. Makes engine equal to new. Write for particulars. Cast Iron Brazing Co., Manchester, N. H.

Sell Your Motor Boat or Motor in This Market Place

When a man is looking for a certain article he naturally refers to the place where he will be most likely to find what he wants. Thousands of readers know of the bargains that are always listed in the Motor Boating Market Place, so they look here first.

Successful advertisers follow the same course as those who are looking for something—they place their advertisements where they are most likely to be seen by prospective buyers.

MoToR BoatinG has a guaranteed circulation in excess of 25,000 copies per issue, and every copy is seen by several persons. In this way practically every motor boat enthusiast in the country is reached, as well as the principal foreign markets. In this great audience there are sure to be several prospective customers for every article you want to sell.

We will write your advertisement if you will send full information and tell the amount of space you wish used. [Enclose remittance to cover size of advertisement you want, figuring at the rate of 3 cents per word, each insertion.

MAIL YOUR ADVERTISEMENT TODAY

J. S. HILDRETH
Adv. Mgr.

MoToR BOATING

381 Fourth Ave.
New York

NAVAL ARCHITECTS & YACHT BROKERS

ARTHUR BINNEY
Successor to EDWARD BURGESS
NAVAL ARCHITECT AND YACHT BROKER
Mason Building, 70 Kilby Street, Boston, Mass.
Agent for The Standard Marine Motor, The Commercial Acetylene Co. (Safety Storage System.)
TELEPHONES:
Office, 8795, Main. Residence, 3023-3, Brookline.
YACHT BROKERAGE DEPARTMENT:
Commission on Sales, 5 per Cent. Commission on Charters, 10 per Cent.

BOWES & MOWER
Naval Architects and Engineers
Yacht and Vessel Brokers
Offices, Lafayette Bldg., Chestnut and Fifth Streets
Bell Phone PHILADELPHIA, PA. Cable Bomo

BREESE & BREESE
Designers and Builders
Motor Boats and Gas Engines
HYDROPLANES
38 East 23rd St., New York City

EXCHANGE YOUR PRESENT ENGINE FOR A NEW ONE
Most liberal allowance made. We have over one hundred engines of all sizes on continuous exhibit. Send for Bargain list.
Bruns, Kimball & CO., Inc.
General Marine Agents and Yacht Brokers.
132 LIBERTY STREET NEW YORK CITY.
Over 2,000 yachts and launches for sale.

BLUE PRINTS, per set, $5.00. FULLSIZE BUILDING PATTERNS, per set, $10.00. 20'x5' SIX-SEATED SINGLE-STEP HYDROPLANE "FLASH" (See October, 1912, Issue YACHTING)

JOHN A. CONNOLLY, JR., Naval Architect, 2715 E. 36th St., Sheepsh'd Bay, N.Y., designer of fast racing yachts, "One Design" classes and Motor boats. Write if interested

COX & STEVENS
Engineers and Naval Architects,
Yacht Brokers
15 WILLIAM STREET NEW YORK CITY
Telephone 1375 Broad

JAMES CRAIG
907-841 Garfield Ave. Jersey City, N. J.
Tel. 2237 Bergen.
DESIGNER AND CONSTRUCTOR OF MARINE GASOLENE ENGINES AND SPECIAL MECHANISMS, SEVEN TO THREE HUNDRED HORSEPOWER

C. W. ESTABROOK
YACHT AND SHIP BROKER
GASOLENE ENGINES
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GIELOW & ORR
Naval Architects, Engineers and Brokers
Marine Insurance
62 BROADWAY, NEW YORK, N. Y.
Telephone 4673 Broad
Plans, Specifications and Estimates furnished for all requirements
Descriptions and Photos submitted upon receipt of inquiry.

WILLARD H. JEROLAMON
DESIGNER AND BUILDER OF
LAUNCHES, KNOCKABOUTS,
Sail Boats, Sea Bright Dories, and Ocean Pound Fishing Boats
GASOLINE ENGINES INSTALLED. BOATS STORED.
GALILEE, N. J.
Telephone Connection. P. O.: Station A, Long Branch.
Estab. 1880.

(*Continued from page 88b.*)

The Auto Safety Crank.

This crank, which is designed as a starting crank for gasoline engines, is manufactured by B. F. Perkins & Son, Inc., of Holyoke, Mass. This device consists of an A-shaped frame supporting a ratchet crank which connects with the tail shaft of the motor by a heavy chain. The stand is adjustable so that the crank can be made to fit any marine engine. There is a larger sprocket wheel on the crank shaft than there is on the starting crank itself and consequently it does not require as much effort to turn the engine over as it does when the crank and engine are directly connected.

* * *

J. M. Motor Boat Supplies.

H. W. Johns-Manville Company, of New York, are the makers of many accessories for motor boat use. Their line includes the J-M spark plug, which has both mica and porcelain insulation and a high grade of firing points. The company also make a cable terminal which will fit all plugs and will give an absolutely firm and tight contact when once adjusted. The terminal can be detached from the spark plug very easily and quickly. This terminal sells for 25 cents apiece. The J-M dry battery is also manufactured in both the square and round types and in 20, 30 and 35 amperes capacity. They range in price from 25 cents to 35 cents apiece. The company also makes two types of fire extinguishers suitable for use in motor boats.

* * *

Peerless Gasoline Separator.

The Peerless Gasoline Separator is designed to be placed anywhere along the gasoline pipe and it is claimed by the manufacturers, the Stott-Crowley Company, Detroit, Mich., that the device will prevent any water or other impurities reaching the carbureter. The device consists of a brass shell into which the gasoline is led near the bottom and from which it leaves at the top. Before reaching the pipe at the upper end of the shell it has to pass through a chamois skin that is stretched across the shell. There is a draining cock at the bottom of the shell through which all sediment can be drawn off. This device is also made in aluminum for use in very light boats. These separators are made to fit any size gasoline pipe and sell for from $5 to $8 apiece.

* * *

The Auto-Pneumatic Swimming Belt.

The Auto-Pneumatic Swimming Belt Company, Inc., New York. This life-saving device is constructed from strong textile covering over aluminum ribs. The ribs are semi-circular in shape and the entire device only weighs 1½ pounds and folds into a space 5 x 6 inches. When it is necessary to use the device it is opened and automatically fills with air, which is kept in the device by a check valve. This device is passed by the United States Government and is sold for $5.

* * *

Impervo Waterproof Cloth.

E. A. Armstrong, 208 West Winzie Street, Chicago, is the manufacturer of Impervo Cloths which can be made up into clothing for use when on the water or which can be used for various other services where an absolutely waterproof fabric is necessary. It is claimed that this cloth will not stick or soften in any weather and will not stand repeated wettings and dryings without cracking. One of the hardest tests to which a waterproof garment can be subjected was during the trip of the motor boat "Detroit" from Detroit, Mich., to St. Petersburg, Russia.

* * *

Kingston Carbureters.

Byrne-Kingston & Co., of Kokomo, Ind., are the manufacturers of the well-known Kingston Carbureter. This carbureter has a rather original device for the regulation of auxiliary air and has only one adjustment. There are no springs or dash-pots. The auxiliary air supply is obtained through five valves each of which is kept closed by a steel ball. When the engine speeds up to a sufficient point to require a larger air supply the suction in the carbureter is great enough to lift one of more of these steel balls. This, it is claimed, provides a mixture always in the proper proportion. These appliances are made to fit any size of engine of either the two or four cycle type.

NAVAL ARCHITECTS & YACHT BROKERS

ORIGINAL "V-BOTTOM" MOTOR BOATS

PIUTE III—A notable 24' "Hand V-Bottom," which has made good on all waters. A real salt water sea boat, with speed and comfort.
YOU CAN BUILD ONE. THERE IS NO STEAM BENDING.
Send stamp for illustrated circular.
WM. H. HAND, JR., NAVAL ARCHITECT,
New Bedford, Mass.
I can also supply a limited number of complete boats built to order.

KROGMAN & PURDY
Yacht and Ship Brokers
HIGH GRADE YACHTS OF ALL TYPES FOR SALE AND CHARTER
92 State Street, Boston, Mass.
Correspondence Invited Particulars Furnished

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Specialist in General Yacht Business
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MARINE RAILWAYS, STORAGE, REPAIRS
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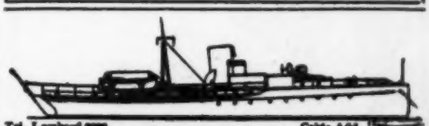
OUR Brokerage Department facilities enable buyers to choose from a most complete list of high grade pleasure and commercial vessels of recent build, at remarkably low prices. We can fill your requirements no matter what they may be.
Repairing - NAVAL ARCHITECTURE - Winter Storage - Insurance

TAMS, LEMOINE & CRANE
Naval Architects and Yacht Brokers
Telephone 4510 John 52 Pine St., N. Y. C.



Tel. Lombard 3209 Cable Add. "Murray"
J. MURRAY WATTS
Naval Architects and Engineers Yacht and Vessel Designs
Offices 1, 907-909 BROWN BROS. BUILDING
800 CHESTNUT STREET PHILADELPHIA

JEFFERY'S MARINE GLUE

The Purpose For Which the Various Grades Are Intended

For Deck and Hull Seams of Yachts and Motor Boats,

—USE—

No. 1, Extra Quality

Black, white yellow or mahogany color. Give black the preference; it is more elastic and satisfactory in every way.

Specified by all first-class designers, and used exclusively by all the prominent builders.

FOR SHIP'S DECKS USE

No. 2, First Quality Ship Glue

No. 3, Special Navy Glue

For Waterproofing Canvas, for Covering Decks, Tops of Cabins, Canvas Boats and Canoes

—USE—

No. 7, Soft Quality

Black, white or yellow. It not only water-proofs and preserves the canvas, but attaches it to the wood, and with a coat of paint once a year will last as long as the boat.

Waterproof Liquid Glue
Is Used for the Same Purposes as No. 7 Soft Quality
Also in Combination with Calico Between Double Planking of Diagonally Built Boats

It is ready for use, requires no heating; simply open the can and paint it on, like ready-mixed paint.

This glue will also attach cork, felt, rubber, leather and linoleum to iron, steel or wood.

Special Marine Canoe Glue

Best Filler for Canvas

Black, white and yellow

Our 25c. emergency cans made a big hit. Every canoeist should carry one; it is as valuable to him as a repair kit to a bicyclist or automobilist.

It is a Johnnie-on-the-spot article that no boatman should be without. Sent by mail on receipt of 30 cents in stamps.

All put up in 1, 2, 3 and 5-lb. cans; also in 14, 28, 56, 112-lb. boxes, either tin or wood

Insist on Having the RIGHT Kind if You Hope to Obtain Satisfactory Results

The largest dealer in your town carries this in stock, if not, he should. Tell him to write us for the agency.

AGENTS WANTED EVERYWHERE
For Sale by All Yacht, Boat and Canoe Supply Houses and Sporting Goods Dealers. Send for Samples, Specimens, Circulars, Directions for Use, Etc.

L. W. FERDINAND & CO.

Importers and Distributors

201 South Street

BOSTON, MASS., U. S. A.

Install One of Our SIMPLEX CLOSETS

in your boat. Can be used above or below water line.

Price, only $30.00 each

MARINE HARDWARE CO., Peabody, Mass.

The Star Air and Water Pumps

Send for catalogue

W. & J. TIEBOUT

MARINE HARDWARE

No. 118 Chambers Street, New York

Send 4 cents postage for Marine Catalogue

(Continued from page 115.)

Vanderherchen's Supplies.

F. Vanderherchen's Sons, of Philadelphia, Pa., have been in the canvas business for the last sixty years. Since the advent of the motor boat the firm has made a specialty of spray hoods, awnings, and other equipment, including a complete line of marine hardware and deck fittings. In fact, this firm is in a position to supply anything in either sails or marine hardware for any class of boat. A 400-page catalogue will be mailed upon receipt of 22 cents in stamps.

* * *

Wicker-Kraft Furniture.

The Wicker-Kraft Co., of Newburgh, N. Y., are the makers of wicker furniture for motor boat and yacht use. Their line includes chairs, settees, canoe seats, canoe backs, stools, tables and lounges, all made of wicker. These furnishings are desirable for both open and cabin motor boats and are much more comfortable and serviceable than the built-in seats which used to be used. A type of chair is now made by the company which has already attracted a great deal of attention. This chair is made so that an ordinary life belt can be slipped under the seat and fastened there by a hinged cover.

* * *

Wolf's Head Oil.

The Wolverine Lubricant Co., of New York, report that the past season has been the most successful they have ever had and that the number of users of Wolf Head Oil is increasing daily. As proof of the fact that their oil is standing the test of severe service they quote the fact that among others that use Wolf's Head Oil exclusively they might mention the Electric Launch Co., Crane Brothers, The Gas Engine & Power Co., and Charles L. Seabury, Inc., The Van Blerck Motor Co., The Gray Motor Co., The Detroit Engine Co., The Atlantic Boat Co., and many others.

* * *

Chase Leather.

L. C. Chase & Company, of Boston, Mass., are the manufacturers of an imitation leather which can be used for auto tops and spray hoods, as it is waterproof, durable and looks exactly like genuine leather. The material can be obtained in any desired shade and can be made to resemble any of the popular leather grains, or can be had in a plain or ungrained finish.

* * *

Marblehead Anti-Fouling Paint.

The Stearns-Mackay Manufacturing Company, Marblehead, Mass. This company has for many years marketed an anti-fouling paint in both green and white. The anti-fouling green is a bottom composition which has been used all over the United States where it has given satisfaction. In continued tests in Florida waters where the destructive teredo worm gives such great trouble to boat owners, Marblehead Green has shown up very well. It has a very smooth and slippery finish and is thus desirable for use on racing launches where all friction must be eliminated as much as possible.

* * *

Lobee Pumps.

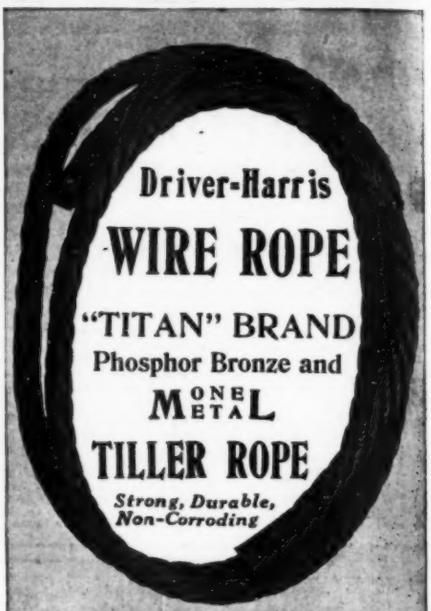
The Lobee Pump Machinery Co., of Buffalo, N. Y., are the manufacturers of a complete line of rotary circulating pumps for use on marine engines. These pumps are arranged to be driven by bevel or spur gears, by chain drives, or by friction wheel. The pumps can be mounted either horizontally or vertically and require practically no packing or other attention.

* * *

Springfield Boat Houses.

The question of housing a boat is one that has perplexed many people who may find a solution in the portable boat houses manufactured by the Springfield Mfg. Co., of Springfield, Mass. These houses are built in many sizes and are of an excellent grade of material and workmanship. The portable feature is especially desirable for boat houses inasmuch as they can easily be erected and taken down from time to time in case it has been necessary to change the location. The houses are fully guaranteed by the makers, and if further information is desired the company will be pleased to send the catalogue "A" which not only describes their boat houses but their cottages, garages and other buildings.

(Continued on page 118.)



Driver-Harris Wire Co.
HARRISON, N. J.

Patents Pending.

Cranks your marine motor like an automobile, but without possibility of a back-kick. When motor back-fires, the crank handle is not affected. The chain and sprocket reduction makes it very easy to turn the motor over.

The Auto Safety Rear Starter is a perfect mechanism. Adjustable stand makes it possible to arrange crank at any desired height above engine shaft. Readily applied to any size or style of engine. Can be mounted upon bulkhead instead of stand if preferred.

Write today for information and prices.

B. F. Perkins & Son, Inc.
AUTO SAFETY CRANK DEPT.
HOLYOKE, MASS.

MFD. ONLY BY B. F. PERKINS & SON, INC.

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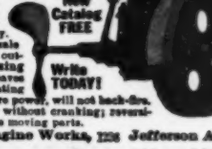

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(*Continued from page 116.*)

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McFarland Foundry & Machine Co., Trenton, N. J. Harthan propellers are manufactured by the above company and have been on the market for many years and have been extensively used on both heavy duty and speed boats. The wheels are made in both two and three blade types, either right or left handed. They are made in a wide range of sizes and owing to the fact that several imitations of the Harthan wheel have been marketed, each blade of the genuine article is stamped "Genuine Harthan Propeller."

* * *

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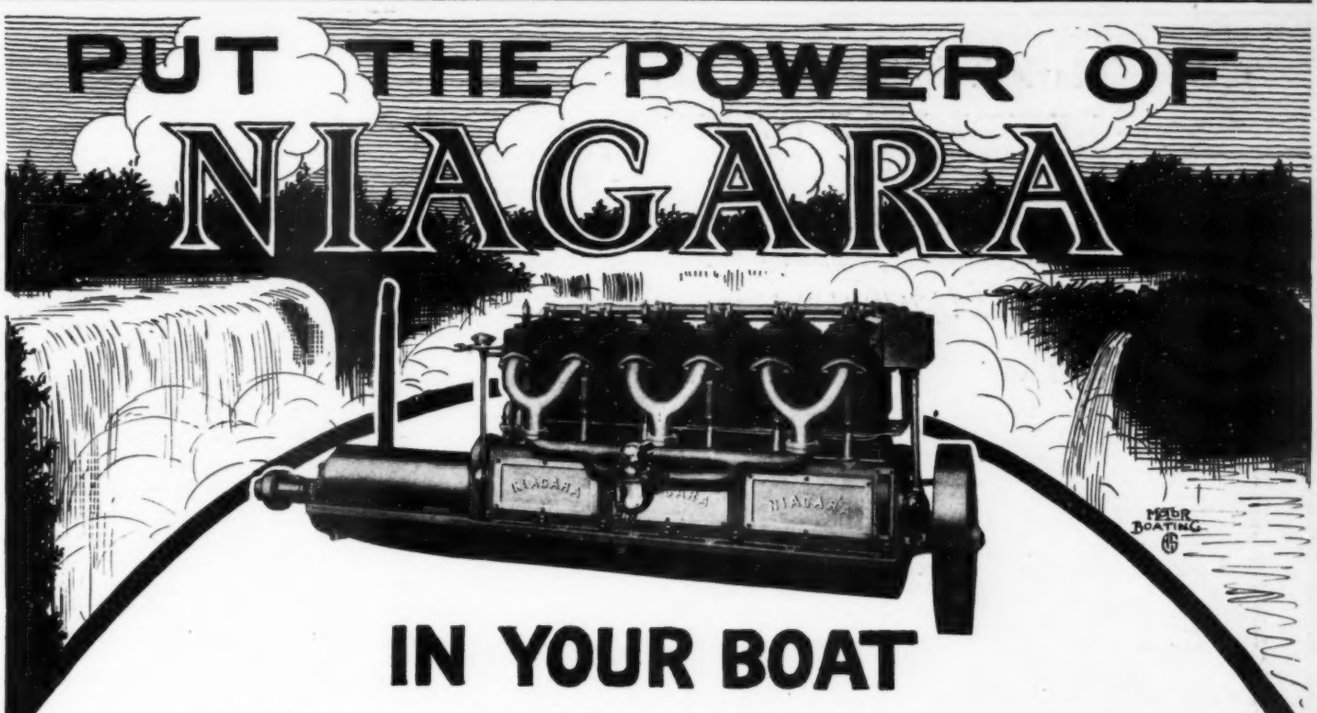

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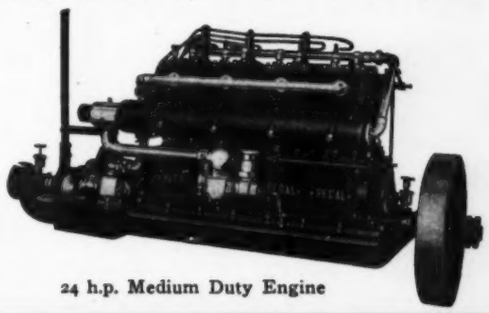

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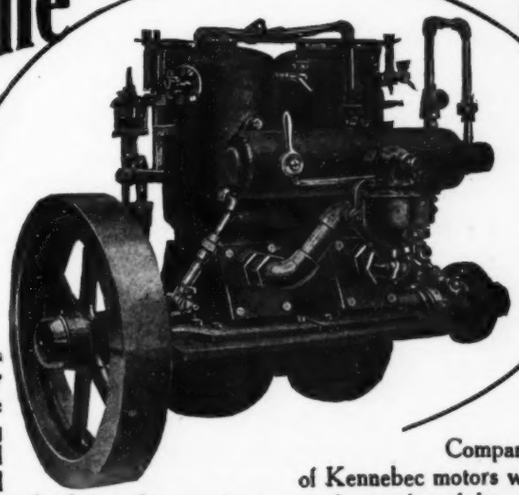

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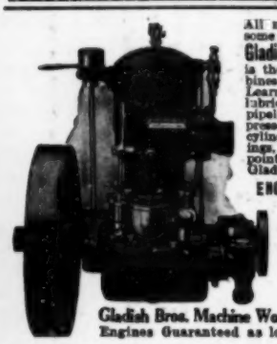

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Keeps bilge pumped dry all the time. Removes gas as well as liquid. Installed in motor-cooling system. No operating expense. *Write for full information and prices.*

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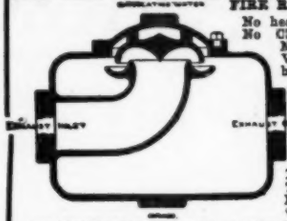

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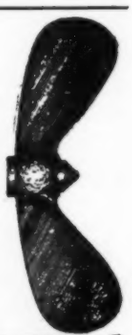

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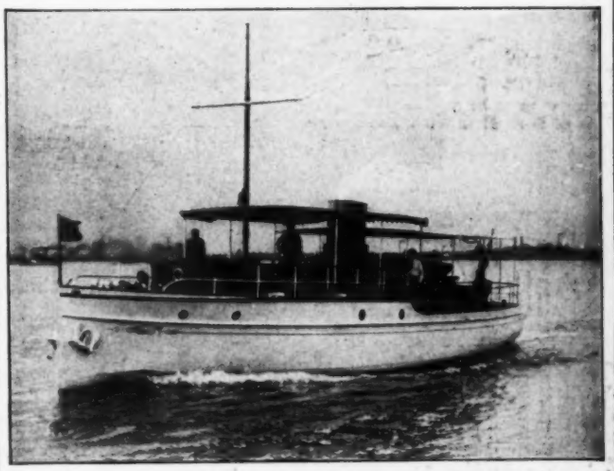

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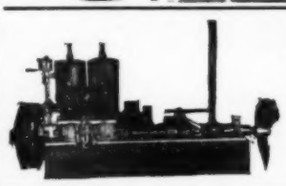

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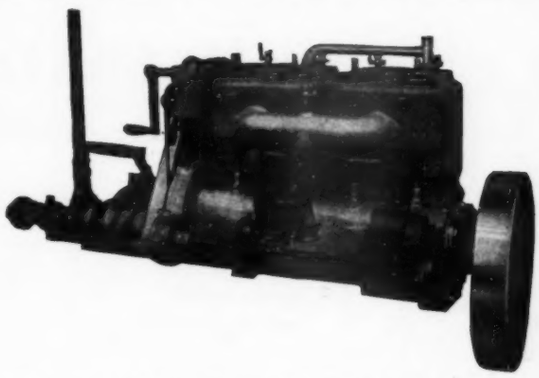

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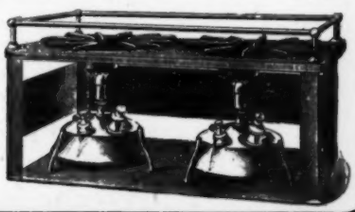

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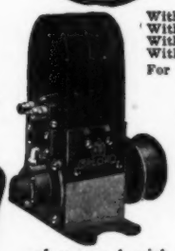

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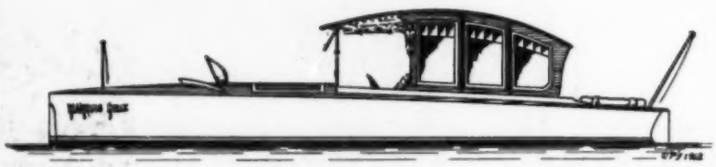

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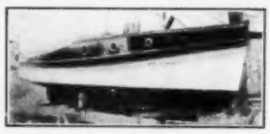

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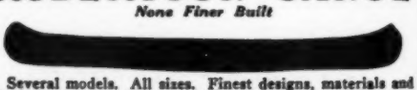

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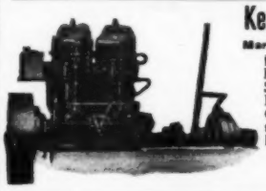

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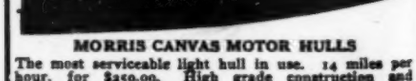

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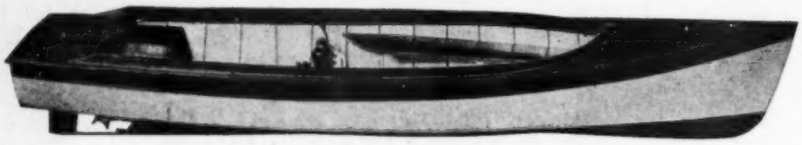

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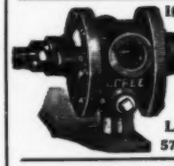

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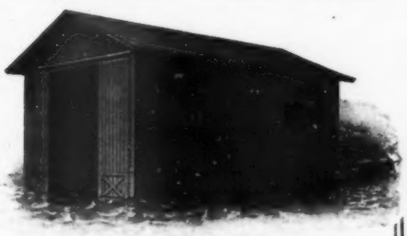

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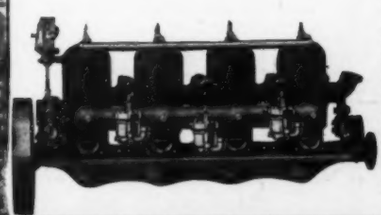

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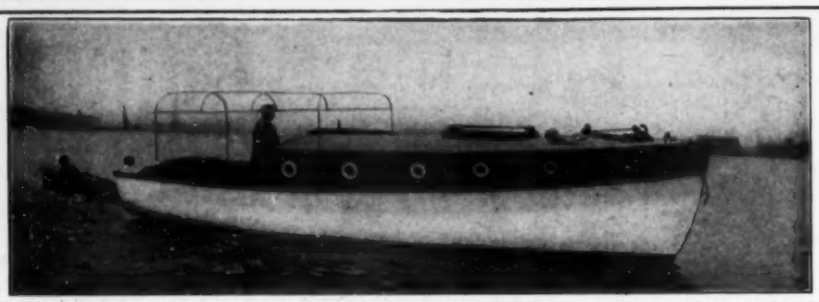

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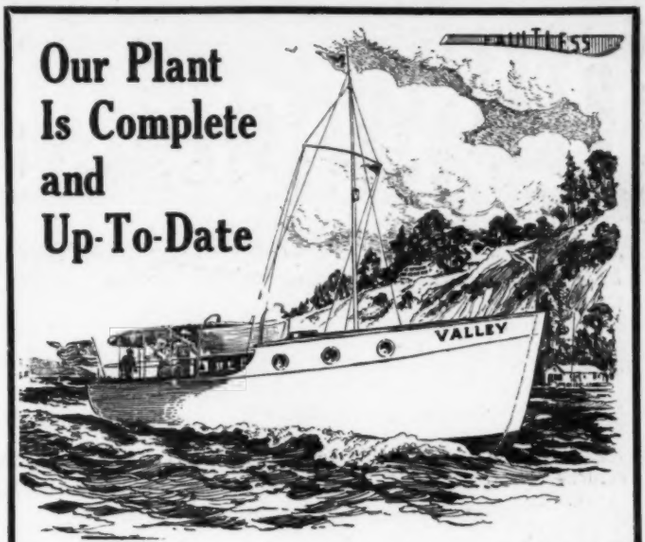

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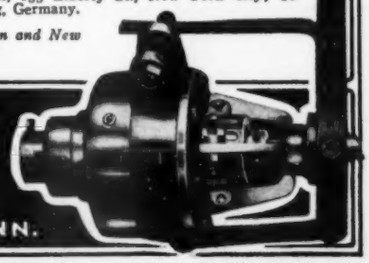

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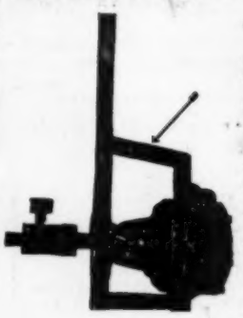

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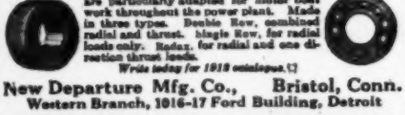

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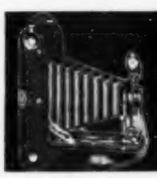

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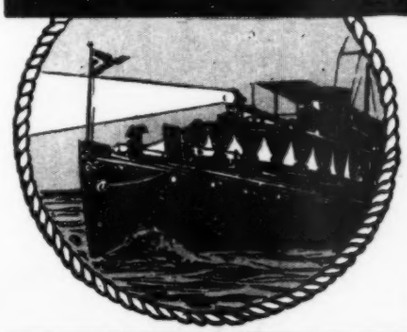

A Dayton 8-light outfit crossed the Atlantic in the motor yacht Detroit. Capt. Day says: "From the time we left we never had the slightest difficulty. Your lights were lights that never failed." Ample current for ignition always available.

The Dayton Electrical Mfg. Co.

Largest Manufacturers of Ignition and Lighting Apparatus Exclusively in the U. S.
186 St. Clair Street, Dayton, Ohio

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This picture shows one of our 45 ft. cabin cruiser frames ready to take apart and crate for shipment. Everything is done right up to the point where planking is to be put on. One man can reassemble this frame and have it ready for planking in six hours' time. Any man, experience unnecessary, can finish this boat and fit it with power for less money than he would have to pay for the cheapest 25 ft. cruiser offered by any manufacturer of completed boats to-day. We carry a full line, from the canoe to the 65 ft. cabin cruiser.

Our Finished Boats

You may not have time to build your own boat. Cabin cruisers are our specialty. Write us and we will convince you that other manufacturers cannot meet our prices on finished boats.

The superior excellence of our designs; beauty, seaworthiness, and speed in our boats; and a square deal and popular prices have brought us in the past five years from a small, unknown factory to rank among the largest and best known builders of both knock-down and completed boats in the land.

Let us quote on your specifications for a boat of any type.

We make a specialty of knock-down frames for large cabin cruisers, but as a result of our frame business, can quote prices on finished cruisers that cannot fail to interest.

Get our free catalog which covers the whole field of knock-down and finished boats.

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1912 Models

are simply further proof of the undisputed fact that

QUALITY COUNTS

Quality of Design *Quality of Materials*
Quality af Workmanship *Quality of Service*

We build heavy duty Motors from 15 to 75 H. P.

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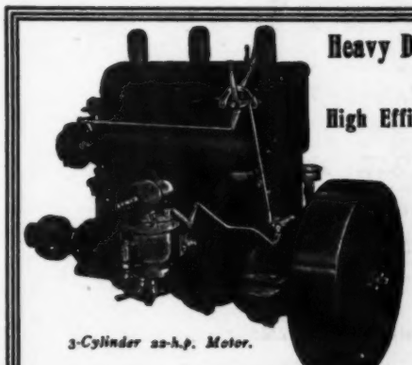

3-Cylinder 22-h.p. Motor.

Heavy Duty without Heavy Weight

High Efficiency without High Speed

The wide variety of sizes and types—1½ to 50 H.P., 1 to 6 cylinders—brings it in reach of all users of boats, from rowboat to fishing schooner or large yacht. Write for new art marine motor book.

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Good Times Guaranteed

If you put a **LOCKWOOD ASH MOTOR** in your boat, you are sure of pleasure unmarred by motor troubles. You will get the biggest value for your money because

WE SELL ON THIRTY DAYS' TRIAL

AND we guarantee every engine for a year besides. Guess our motors must make good—what? Well, ask any of our customers whose names we will gladly send—some near you, too. WRITE TO-DAY and get our handsome 1912 catalog. Tells everything—shows all parts—quotes right prices.

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This 6 H. P. 1913 Toledo, $94

With Wico self-contained Sparking Device

STORM—RAIN—SPRAY—have no effect on the working of this outfit. No batteries, no coils, no timer, no complicated wiring. Simple and compact, delivers a hot spark every revolution without fail. Just as hot a spark when motor is turned over by hand as when running at high speed.

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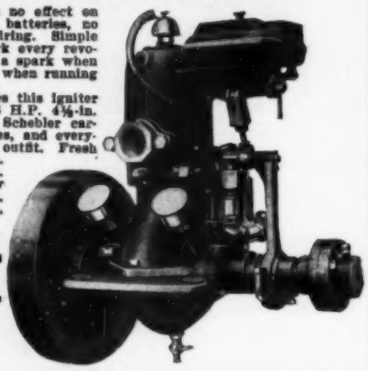

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We build 2 to 30 H.P. 2 and 4-cycle 1 to 4 cylinders.

We do not claim that the Palmer is the only good motor. It is one of the few. Palmer users call it a little better than good. You can take your choice.

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11 Models
1, 2, 3 Cylinders
3 1-2 to 30 H. P.

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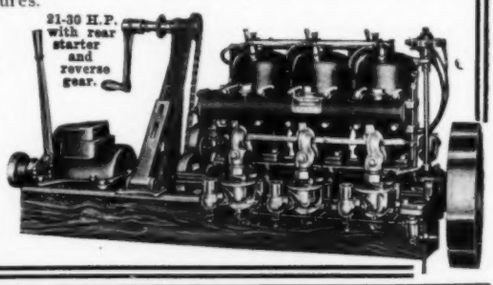

21-30 H.P. with rear starter and reverse gear.

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9 SIZES 11 STYLES

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Established 1830 STAMFORD, CONN.

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THE IDEAL CRAFT FOR FISHING—LIGHT, WIELDY, SWIFT

So easily handled that a twist of the paddle will prevent the gamy fighter from fowling the line against the canoe and spitting out the hook.

If you are a lover of outdoors you should indulge in the poetry of motion—canoeing.

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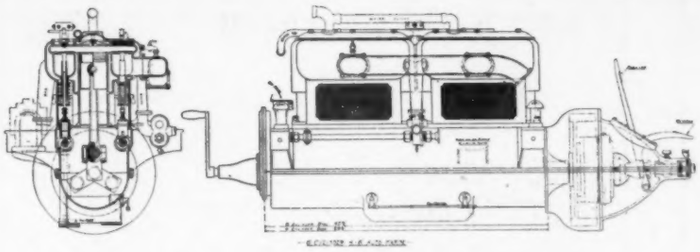

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Have water-cooled oil under high pressure. Water-cooled bearings, aluminum base with intermediate bronze section taking all strains. Air starting. Some of above being completed for the most particular and experienced trade in this country.

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The Patterson Hydroplane was designed by Mr. John L. Hacker, designer of Kitty Hawk II (average 48 miles per hour), Gretchen II and many other famous boats. We guarantee 27 miles per hour, but have found it will do 30 easily.

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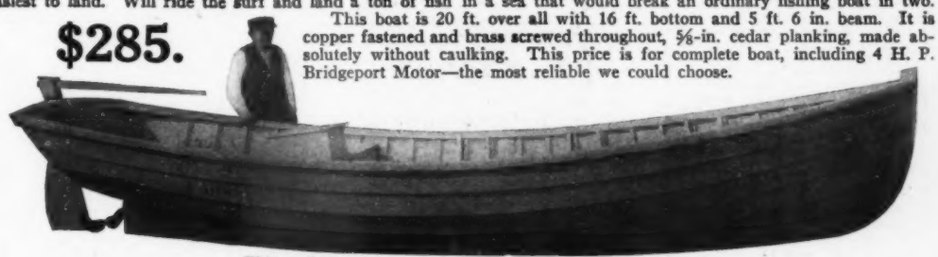
$285.

This boat is 20 ft. over all with 16 ft. bottom and 5 ft. 6 in. beam. It is copper fastened and brass screwed throughout, 5/8-in. cedar planking, made absolutely without caulking. This price is for complete boat, including 4 H. P. Bridgeport Motor—the most reliable we could choose.



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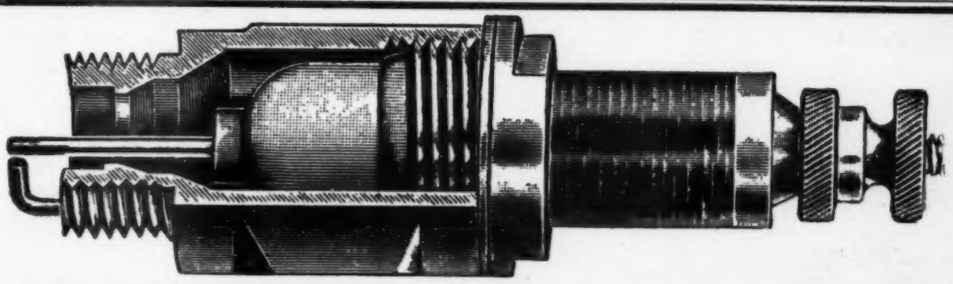

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No stern wheel. No tunnel stern. No screw propellers. No shaft under water. No strut. No non-lubricated outboard bearing. No projecting rudder. No rudder-stock, brackets, quadrant, tiller rope or pulleys. No torque.

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The fastest hull for low and moderate powers yet devised. Built under the supervision of the designers. We are sending these boats to all parts of the world.

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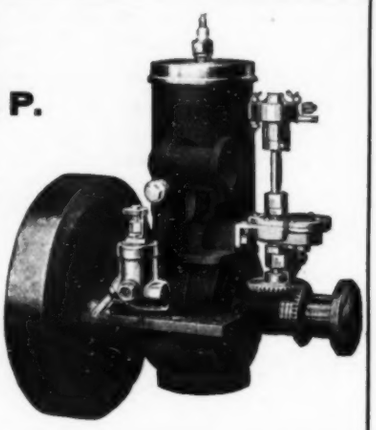

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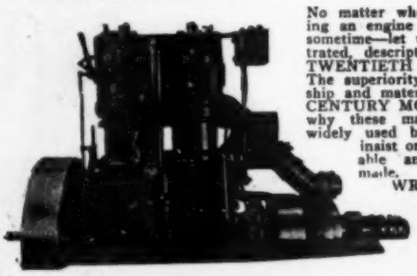

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21 Footers with 4 cylinders 20 Horse Power Motor **$875.**

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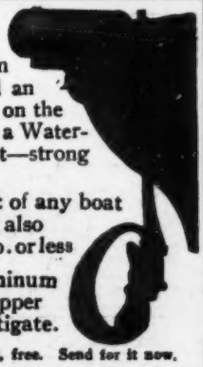

For small hydroplanes and Hand V-bottom boats, a Waterman Motor is just the thing. One of our customers has just launched an 18-footer, equipped with our B-2 (only 10 to 12 horsepower) and on the trial trip went over a measured mile in three minutes flat. There is a Waterman Marine Motor for every purpose—guaranteed for life. Light—strong—dependable—smooth-running.

The "Porto"—Two in One makes a motor boat of any boat in five minutes and also "makes good" ashore, running any machine requiring 2 h. p. or less

Waterman Speed Motors are made with Aluminum Crank Cases, Copper Water-Jackets and all other high-grade features. Don't fail to investigate.

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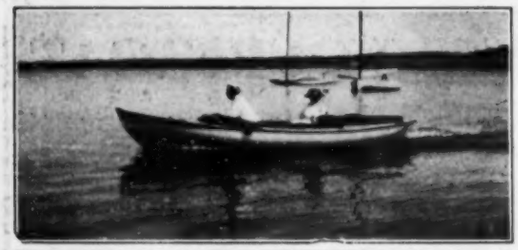

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12-ft. Rowing Skiff in stock; low price but good. No patterns or knockdown frames.

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Small tank, conveniently stowed anywhere, supplies a month's lighting.
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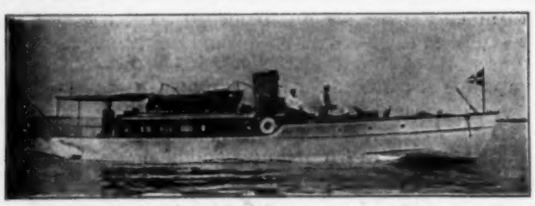

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We also carry a complete stock of Marine Hardware and Fittings. Send for catalog.

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Auxiliary Schooner Yacht, 135 ft. L.O.A.

107 ft. W. L. x 27 ft. breadth x 14 ft. draft

Spacious and comfortable below decks with thorough ventilation.

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Suitable for yachtsmen requiring a deep sea cruiser of the best class. Full particulars on application

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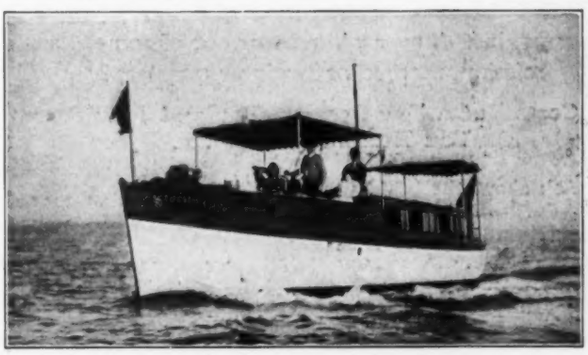

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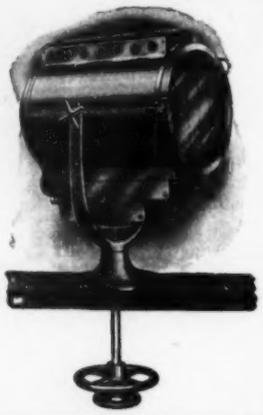
Searchlights in designs from 7 in. to 60 in. diameter.

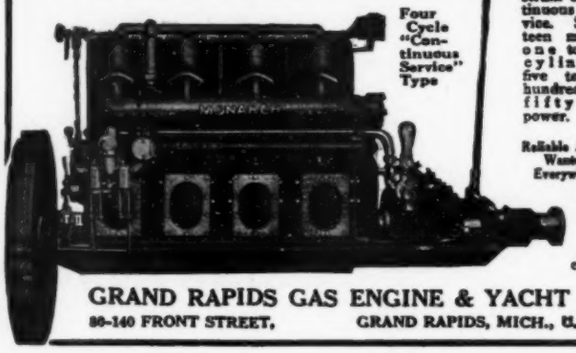
Let us tell you about our big line:



The Carlisle & Finch Co.
261 East Clifton Avenue
CINCINNATI, • • OHIO

USE ANY FUEL IN **MONARCH** MARINE MOTORS

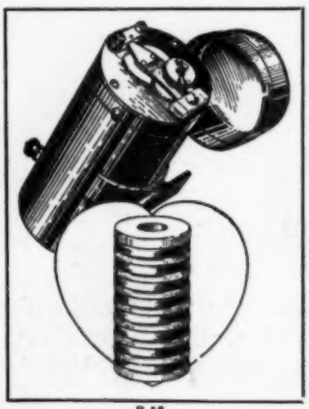
Monarch Multiple Fuel Motors run on either gasolene, petrol, naphtha, benzine, alcohol, distillate, kerosene or paraffin.
Monarch Motors are the finest made for reliability and durability under the strain of continuous service. Seventeen models; one to six cylinders; five to one hundred and fifty horse power.



Reliable Agents Wanted Everywhere

Write today for our latest catalog

GRAND RAPIDS GAS ENGINE & YACHT CO.
80-140 FRONT STREET, GRAND RAPIDS, MICH., U. S. A.



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MARINE COILS

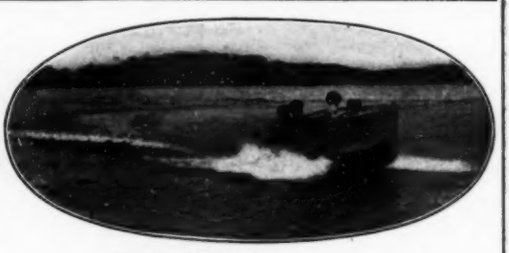
Our factory is the largest in the world devoted to the manufacture of coils. Three factories devoted to manufacture of coils, timers, spark plugs and magnetos. Complete catalogue on request.

HEINZE ELECTRIC COMPANY
Station A, Lowell, Massachusetts
SALES OFFICE: DETROIT, MICH.

13 Foot Hydroplane BUMBLE BEE

Complete with Double Cylinder Engine $325.00

K. D. Frame $27.00



SPECIFICATIONS.

Cedar planked, copper fastened, mahogany trimmed, brass fittings, auto-control steerer, double cylinder high-grade engine, fully guaranteed.

CAN YOU BEAT THIS?

Particulars on other sizes and types on application. Either complete or in the knockdown.

Catalog G

BATH MARINE CONSTRUCTION CO. :: Bath, Me.

Remember we are the originators of the famous BATH V BOATS.

Is Your Boat Insured

against danger while in or out of commission, moored or in winter quarters?

It Costs But a Few Cents a Day and May Save You Hundreds of Dollars

Ask about the broad protection of a policy in the

Insurance Company of North America

Walnut and Dock Streets, Philadelphia

Founded 1792

Capital, $4,000,000

Surplus to Policy Holders over $8,000,000

Sell It In MoToR BoatinG's Market Place

WHAT HAVE YOU GOT FOR SALE? WHAT DO YOU WANT TO BUY?

Every motor boatman, every yacht owner, sooner or later has something to sell—something for which he has no further use— a boat, an engine, some equipment or other marine article that is just as good for service as ever. The fact that he no longer needs it does not diminish its value to the man who has a use for something of the kind.

There is a good customer looking for every article which is in serviceable condition. The question is to find that customer. That is what MoToR BoatinG's Market Place is for. Send us an advertisement of your discarded articles today.

Rate 3 cents per word. Turn to the Market Place page and see cost of using illustrations.

Auto Craft

POWER LAUNCHES

Best value because a standardized product built in quantities by modern manufacturing methods. Write today for Catalog of our complete line including

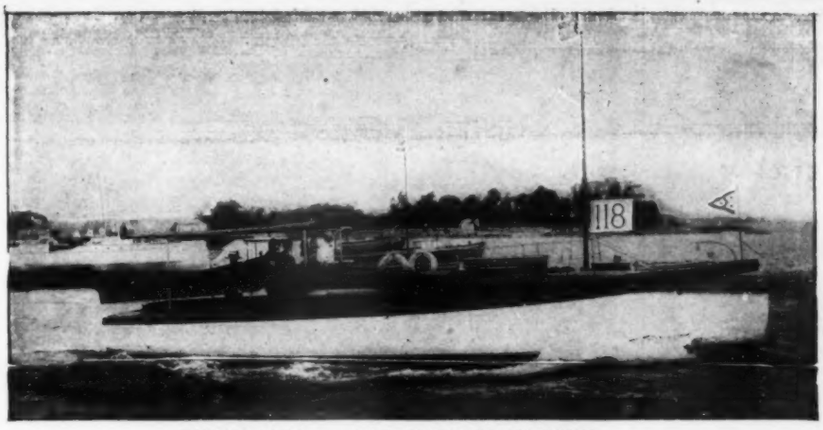
16 ft. Spl., 3 H.P. $300
21½ ft. Spl., 4 H.P. with gear 500
26 ft. Spl., 6 H.P. with gear. 650
22 ft. Junior Runabout, 4 H.P. with gear 500
26 ft. Gentlemen's Mahogany Runabout, 11 H.P. with gear 775

The above and other models in stock for Immediate Delivery. We also build family launches, commercial boats, runabouts, cruisers and row-boats to order. The Cleveland Auto Boat Manufacturing Co., Dealers in principal cities, 1027 River Avenue, N. W., Cleveland, Ohio

J. H. CURTISS CO.
Marine Water Closets

2 SOUTH ST.
NEW YORK

Very highest development of marine water closets for use above or below water line, 4 inch cylinder, discharges contents at third stroke, suitable for heavy work or owner's room. Will outwear any other closet, the gear makes it very easy-working.



SPINDRIFT—30 H. P. RALACO ENGINE

FOR THREE successive years the "SPINDRIFT," owned by Commodore C. R. Butler, of the Albany Yacht Club, has been making an unequalled record in MOTOR BOAT RACING.

In these days of new boats each year, to "beat the rule" or to beat another boat, the wonderful record of "SPINDRIFT" stands absolutely alone.

"SPINDRIFT" has now started on her fourth year by adding the following victories to her already long list:

Colonial Yacht Club's Cornfield Reef Lightship Race—Second Place.
Tappanzee Yacht Club—Grand View-on-Hudson to Hudson, N. Y.—First Place.
Rockland Light and Back—Second Place.
Colonial Yacht Club's Race to Poughkeepsie and Return—First Place.

IN ADDITION TO HAVING WON THE FOLLOWING RACES IN PREVIOUS YEARS:

Oct. 1, 1909, Hudson-Fulton Celebration at Newburgh, N. Y.—First Place.
Oct. 7, 1909, Hudson-Fulton Celebration at Albany, N. Y.—First Place.
Aug. 2, 1910, Lake Champlain Yacht Club—First Place.
Sept. 2, 1910, Ossining, Hudson River Yacht Racing Association—Second Place.
Sept. 21, 1910, National Motor Boat Carnival—Second Place.
Sept. 22-23-24, National Motor Boat Carnival—First Place in Each.
July 4, 1911, Ossining Race—First Place.
July 8, 1911, New Rochelle Race—Third Place.
Aug. 1, 1911, Lake Champlain Yacht Club Race—First Place.
Sept. 6 and 7, 1911, National Motor Boat Carnival, Huntington—First Place.
Sept. 8, 1911, National Motor Boat Carnival, Huntington—Second Place.

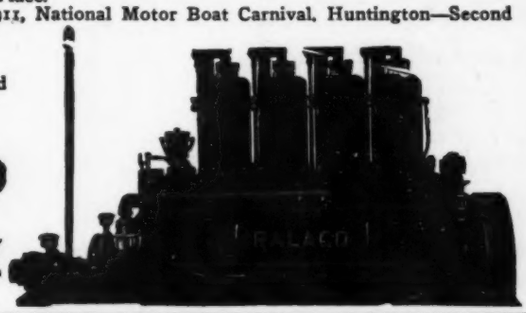
This Record is unequalled by any cruising motor boat in the world.

If you are looking for the same kind of RELIABILITY, and a NOISELESS and ECONOMICAL Engine, investigate

The S. M. Jones Company

Main Office and Factory: 616 Segur Ave., Toledo, O.
New York Office: 136 Liberty St.
AGENTS: C. W. Estabrook, 112 Broad St., Boston, Mass.; A. W. LePage Gasoline Engine & Supply Co., Vancouver, B. C.

RALACO
THE SILENT SIMPLIFIED ENGINE



HOLMES LONG STROKE ENGINES

Built for Business

Our claims of superiority are proven by all the users of Holmes Engines.
We maintain, as we always have, that we manufacture the engine with the largest bearing surfaces throughout. It is the heaviest service engine, not the heaviest weight. The weight is not in the flywheel and heavy base casting, but in the working parts. It is constructed to give the most efficient service, whether in a commercial boat, a ferry-boat, or a pleasure craft.

The Holmes Engine is designed on correct mechanical principles for marine work. One asks, "Why is it this engine without a single attachment, governor or complicated device of any kind runs and controls so smoothly similar to a steam plant?" The answer is the co-operative harmony of its every working part, very simple yet very efficient.

In proof of our claim as above set forth, we would refer you to one of our customers, Mr. M. F. Dennis, who writes of his engine as follows:

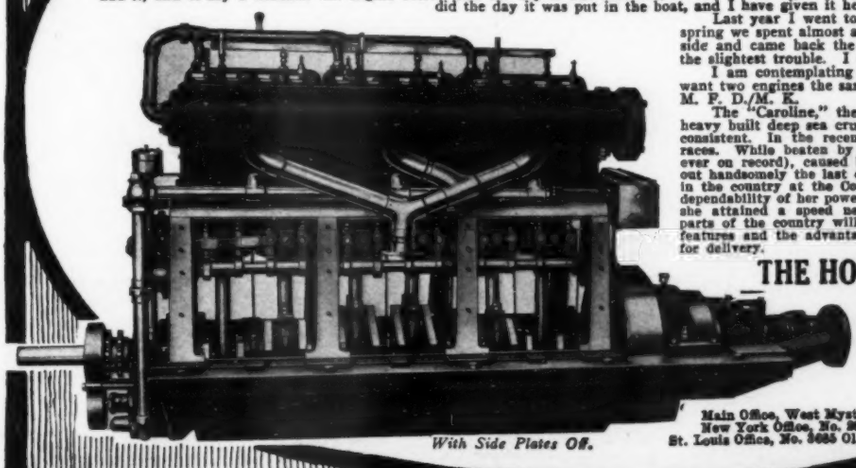
Holmes Motor Company, West Mystic, Conn. September 24, 1912.

Gentlemen: It gives me great pleasure to write you in reference to the six-cylinder 6 x 8½ motor which you installed in the "Caroline" a little more than two years ago. I have given it very hard use at an average of five hundred (500) revolutions. I have not expended one cent on repairs since I have had it, and to-day I consider the engine better than the day it was installed, as every bearing is in perfect condition and it runs just as smooth as it did the day it was put in the boat, and I have given it heavy use with long runs.

Last year I went to Halifax and back without the slightest trouble, and this spring we spent almost a month down at Chesapeake Bay cruising. We went outside and came back the same way, with long runs and heavy weather, without the slightest trouble. I have never had a bearing adjusted.

I am contemplating building a larger boat this winter, and if I do, I shall want two engines the same as I have in use at present. Yours very truly,
M. P. D./M. K. M. FRANK DENNIS.

The "Caroline," the winner of the famous Halifax International Race, is a heavy built deep sea cruiser, and her performances have always been remarkably consistent. In the recent Carnival Events on the Hudson she took part in four races. While beaten by seconds only, in three events (the closest cruiser racing ever on record), caused by her not being in proper racing trim, she however won out handsomely the last day with even conditions over the pick of the best cruisers in the country at the Columbia Yacht Club, proving again the staying powers and dependability of her power plant. In the last race, while turning 525 R. P. M., she attained a speed never before reached. Our representatives in various parts of the country will be very glad to serve you and tell you of our new features and the advantages to be found in our new 1913 Models now ready for delivery.



With Side Plates Off.

THE HOLMES MOTOR CO., Inc.,
Distributors of the
HOLMES ENGINES

Main Office, West Mystic, Conn.
New York Office, No. 39 Broadway,
St. Louis Office, No. 3655 Olive St.

BROKEN PARTS WELDED

We weld cracked cylinders and crank cases—make them as good as new. All repairs made within twenty-four hours after part reaches our shops. Illustration shows cylinder on which we saved the Consolidated Motor Company of Bridgeport, Conn. $30.00.

Scored Cylinders a Specialty

By a special process we repair cylinders scored from a loose wrist pin. Bore is not enlarged—your old piston and rings will fit repaired cylinder. Our charge, on cylinders up to 6" bore, $12.00.

Where cylinder is worn or scored in many places from lack of oil, so that our special process does not apply, we can re-grind the cylinder absolutely round and fit new piston and rings. Repaired cylinder will have same compression and motor the same power as when new. Charges according to size of bore. Always send one piston with the cylinders.

Write for booklet and full information

GUARANTEE:—If within one year from date of repair, part is found unsatisfactory, ship back at our expense (by freight collect). Upon examination, we will refund all charges or, if you prefer, do the work over without extra charge.

WATERBURY WELDING COMPANY
1148-D SO. MAIN STREET, WATERBURY, CONN.

KRICE Carburetor 20% More Power

30 DAYS TRIAL

We absolutely guarantee the Krice Carburetor to use less gasoline—give better control and 20% more power. Your money back if it doesn't.

The only sure way to know that you are getting *all* the power from your engine is to try a Krice Carburetor. Write today for literature.

KRICE CARBURETOR CO.
1201 Oakland Ave., Detroit, Mich.

1912 Annual Catalog No. 22

Our 1912 Catalog, the Largest and Most Complete Catalog of the kind, containing 216 pages, is Now Ready For Distribution. The Circulation is Limited to ONE HUNDRED THOUSAND Copies. It will be mailed to ANY ONE ON REQUEST.

Cut Prices

Concerns that offer Large Discounts make it their practice to INFLATE LIST PRICES and then offer Large Discounts, which are somewhat misleading. We have seen a catalog in which a certain spark plug is illustrated, "PRICE $2.50, OUR PRICE, $1.00. while THE STANDARD LIST or RETAIL PRICE for the same spark plug as illustrated in Our Catalog and advertised by the manufacturers is $1.00 each. Their CUT PRICE Therefore Is Not Lower Than OUR LIST PRICE.

DON'T BE DECEIVED
By Large Discounts Quoted from Inflated List Prices

ORDER FROM OUR NEAREST BRANCH

The Largest Auto Supply House in America

CHAS. E. MILLER, Manufacturer, Jobber, Exporter and Importer

Home Office: 97 to 103 Reade Street, - - New York City

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THE IMPROVED BALL REVERSE GEAR for MOTOR BOATS

Made only of HARDENED STEEL SPUR GEARS

Most Reliable
Highest Grade
Easiest to Install

Four Sizes Carried In Stock
Send For Catalog

Patented
Apl 9, 1901
Nov. 3, 1902
Jan. 12, 1904

New York Gear Works
56 Greenpoint Ave., Brooklyn, N. Y.

BOAT FITTINGS & SUPPLIES

MARINE HARDWARE

We manufacture and carry in stock everything to equip boats. Get our catalogue, free, and compare our prices with others. Goods guaranteed.

OSHKOSH METAL PRODUCTS CO.
OSHKOSH, WIS.

Drop us a card and get our catalogue by return mail.

If you don't buy of us, we both lose.

Let Us Tell You All About Motor Boat Fires

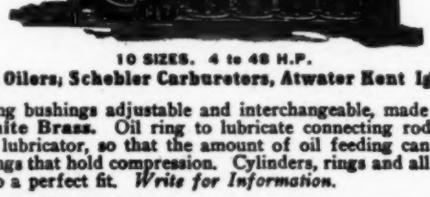
In every motor boat there is constant danger of fire. This type of fire is so difficult to get at and so menacing to occupants of the boat, who may be miles from shore and at the mercy of the sea, that only one extinguisher has been devised which affords real protection. This extinguisher is PYRENE. Let us tell you all about motor boat fires.

Write for illustrated booklet.

Pyrene Manufacturing Co.
1358 Broadway New York City

ROCHESTER ENGINES

HAVE BEEN BUILT FOR 12 YEARS



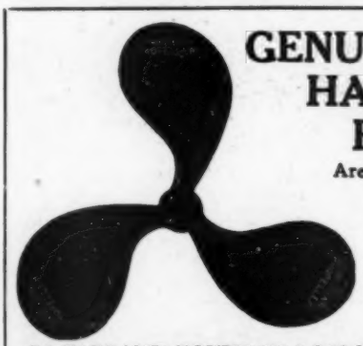
10 SIZES. 4 to 48 H.P.

Detroit Oilers; Schebler Carburetors, Atwater Kent Ignition

All bearing bushings adjustable and interchangeable, made of **Parsons White Brass.** Oil ring to lubricate connecting rod. Sight-feeds on lubricator, so that the amount of oil feeding can be seen. Piston rings that hold compression. Cylinders, rings and all bearings ground to a perfect fit. *Write for Information.*

ROCHESTER GAS ENGINE COMPANY, 106 Platt Street, Rochester, N. Y.

GENUINE HARTHAN PROPELLERS



Are unexcelled for

SPEED
CRUISING
TOWING

Write for Particulars

McFARLAND FOUNDRY & MACHINE CO. *1 BREUNIG AVE., TRENTON, N. J.*

REPRESENTATIVES:

BOSTON: The Lincoln-Dillaway Co., 178 Commercial St.
NEW YORK: Topping Brothers, 122 Chambers St.
PHILADELPHIA: F. Vanderherchen's Sons, 7 North Water St.
PORTLAND, OREGON: The Rober Machinery Co.

BOAT SWITCH — QUICK ACTING SWITCH

IDEAL

SPARK PLUGS — LIGHTING SWITCH

The only way to get ideal spark plug service is to use Ideal Spark Plugs. It is just the same with switches for ignition or lighting current. Use Ideal ignition specialties on your motor and you will have truly ideal ignition service.

Ideal Porcelain Plug, $1.00

The Ideal Spark Plug is made with either porcelain or mica core in all sizes and lengths. The closed end on the firing chamber of the plug protects it from oil and soot, and actually increases the intensity and rapidity of igniting the charge. This is positively the best plug made, regardless of price. A trial will prove it to you.

Ideal Mica Plug, $1.25

Ideal Mica Core Plugs are fully guaranteed. They have the only oil and puncture proof mica core on the market. The mica core is interchangeable with the Ideal Porcelain Core. This is a plug you can put on your engine and forget.

Ask your dealer or send us an order for a sample set

No. 423

Ideal Side Acting Switch, $.50 each. A very compact, inexpensive and trouble-proof switch for marine engines. Quick acting; spring contacts.

No. 502

Ideal Front Connected Quick Acting Switch. $.75 each. Spring contacts that insure perfect connections. Has positive stop which catches and holds when you throw it off quick.

No. 500 A—AUTO OR BOAT SWITCH

Is constructed in such a manner that the connections are impossible to reach, because of their position, and it is impossible to start the engine without using the proper blade.

It is not like the common Auto or Boat Switch, in which you can insert a nail or piece of wire and make the required contact.

Write today for catalog of Ideal Ignition Specialties, Switches, the Ideal Fuse Block, etc.

IDEAL SWITCH COMPANY, Inc.
PLAINVILLE, CONN.

Biddle Propellers *and* Boat Hardware

MONEL METAL

Non-Corrodible Strong as Steel

Biddle Speed Wheel Showing Fairwater Nut

Boat builders and boat owners should know all about the Biddle line.

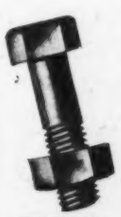
The Biddle Propeller is, without question, the finest and fastest wheel known. It is made of Monel Metal—the wonderful new metal that has the strength of steel, the lustre of silver and never rusts or corrodes.

Biddle Propellers are designed on scientific principles by the ablest naval architects. The blades are much thinner and sharper than bronze propellers (owing to the great strength of Monel Metal). This makes for less friction and greater speed. The blades are absolutely true to pitch and get the utmost out of every engine stroke.

Monel Metal Lag Screw

Bronze wheels turn green from the action of the water. Biddle wheels retain their smooth surface and silvery lustre in fresh or salt water.

Monel Metal hardware outlasts any other material and defies corrosion. We furnish machine bolts, lag screws, wood screws, rivets, washers, boat nails, clinching nails, sheathing nails, etc.



Monel Metal Machine Bolt

Monel Metal tiller rope and guy rope never corrode or break. Monel Metal sheets are ideal for boat sheathing.

Write for booklet containing complete information on propellers and hardware.

Biddle Hardware Company

(Established 1837)

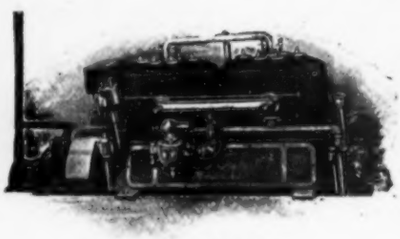
6th and Commerce Sts., Philadelphia
150 Chambers Street, New York

Branch Offices:
London Stockholm Montreal Buffalo

TREBERT

RELIANCE PATENTED

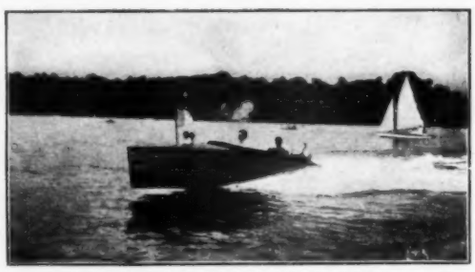
GASOLINE ENGINES



Poppet Valve Type

4 Cyl. Poppet Valve Type
Net Prices

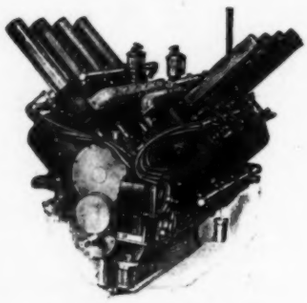
4/40	$675.00
4/60	1012.50
6/60	1012.50
6/90	1687.50
4/75, Heavy duty	1400.00



ENGINES FOR SPEED

If you wish to reach the mile a minute speed your boat should be powered with our "V" shape Piston Valve Engine.

8 cyl., 80-100 H.P., weight 650 lbs. complete.
16 cyl., 160-200 H.P., weight 1200 lbs. complete.



8 V-Piston Valve Type

8 Cylinders "V" Shape

Bore 4⅜ x 5, Patented Piston Valve Type. CRANK SHAFT—nickel steel, oil treated; BEARINGS—of special bearing metal; LUBRICATION—is forced through hollow crank shaft by means of a plunger pump; IGNITION—is a Bosch dual magneto; REVERSE GEAR—is multiple disc friction drive. Engine equipped complete, including 1-1½ gear box, shaft and propeller.

Net Price, $1350.00

H. L. F. TREBERT ENGINE WORKS, 495 St. Paul St., Rochester, N. Y.

WANTED, IDEAS

An Opportunity To Make Money

Inventors, men of ideas and inventive ability, should write to-day for our list of inventions needed, and prizes offered by leading manufacturers.

Patents secured or our fee returned. "Why Some Inventors Fail," "How to Get Your Patent and Your Money," and other valuable booklets sent free to any address.

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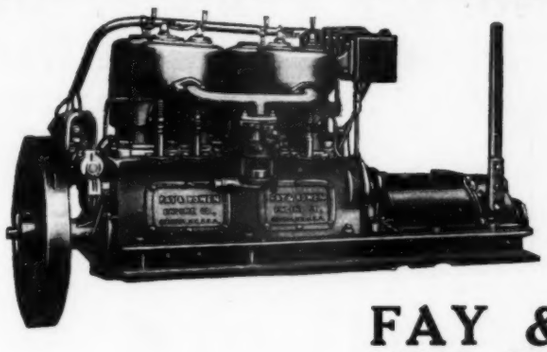
WASHINGTON, D. C.

A Perfect Power Plant Is Essential to Any Boat



Whether the hull is old or new, cheaply or expensively built, plainly or luxuriously equipped, the power plant should be as perfect as you can buy. A

FAY & BOWEN
UNIT POWER PLANT

meets all the requirements. It is a modern four-cycle engine of the auto type, of a rugged design that will stand up under marine work. Remember, a marine engine must run 95% of the time at its maximum (an automobile runs at maximum only about 5% of the time).

Long stroke. Both intake and exhaust valves mechanically operated. Bosch magneto high tension ignition ("Dual" type). Both mechanical and splash lubrication. Complete aluminum base, including clutch case. Regulation perfect. Fuel consumption very low. Quiet, compact and powerful. Users of these engines will tell you they "bring you home."

We make a full line of sizes—two, four and six-cylinders, and from 10 to 65 horsepower.

We also continue to make our well-known reliable standard two-cycle machines—conceded to be the best engines of their type in the world.

Send for Bulletins and Catalogue.

Whatever you want in a boat or engine for 1913, a moderate-speed family launch, a fast runabout, or the power for either, we can supply. Ask about our 20-mile 32-ft. runabout.

FAY & BOWEN ENGINE CO., 104 Lake St., Geneva, N.Y., U.S.A.

ROCHESTER RELIANCE
MARINE STEERING GEARS

A Wheel for Every Type of Boat

Scored Drum with Fore and Aft Motor Control Levers

Endorsed by the

FOREMOST DESIGNERS AND BUILDERS

We manufacture a complete line of Auto and Cruiser Type Steering Controls in the following styles—

RACK and PINION—CHAIN and SPROCKET—MAPLE DRUM and SCORED DRUM

The drum has a positive grip on the tiller lines at all times. "ROPE GUIDES" prevent tiller lines becoming tangled o. jammed. Only one turn of the line on the drum is required. Direct connection to carburetor and timer. No bell cranks or knuckle joints necessary. Eliminates all installation difficulties.

Insist on a Rochester—Reliance Steering Control

Write for Literature

HALL-GIBSON CO., 1222 CORTLAND STREET ROCHESTER, N. Y.

THE CANADIAN-FAIRBANKS-MORSE CO., Canadian Distributors

The Single Adjustment, Floating Ball

KINGSTON CARBURETOR

Is Supreme for Marine Work

Does your motor hit every cylinder without fail, no matter whether just starting or after continued running and regardless of the conditions or changes of weather?

Perfect carburetor service is so rare on marine motors that few boatmen realize how much the value of their whole boat and equipment would be increased if they had a carburetor perfectly adapted to marine service.

The Kingston Carburetor is ideal for marine work. It is the carburetor for the amateur and for the expert. It gives the perfection of service appreciated by experts, and it is so simple to keep at the highest operating efficiency for all conditions that the user requires no mechanical knowledge or experience to get the best results.

Carburetion on marine motors is the severest test of carburetor service. The dampness and tendency to corrosion, as well as the frequent and rapid changes of weather conditions require different qualifications than are generally possessed by carburetors for automobile and stationary engine use. A special marine carburetor is a necessity.

The Kingston Carburetor has only one adjustment,—to vary the proportion of gasoline to air. This is required by different grades of fuel and climatic changes. In every other detail the operation is absolutely automatic.

The Kingston has no springs or dash-pots. These deteriorate with age and corrosion so that after a short period of use they do not give the same results as when new. Instead of these, the supplemental air supply is controlled by five valves covered by bronze balls. The motor suction lifts these balls as required, giving exactly the same results at all times, because the weight of the balls cannot vary.

For All Types of Motors

Write To-day for Our *Free Trial Offer* and *Guarantee.*

Byrne-Kingston & Co., Kokomo, Indiana

New York Office, 1733 Broadway
Seattle, 520 First Avenue, South.
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Cosmopolitan Magazine 6% Gold Bonds

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These ten-year bonds are issued by the International Magazine Company, which owns and publishes the **Cosmopolitan Magazine, Motor** and **Motor Boating,** the three leading publications in their lines, on which this Million Dollar Bond issue is a first lien.

These **6% gold bonds** are also guaranteed by **William R. Hearst,** and are protected by **Twenty Million Dollars** of assets.

The earnings of the **Cosmopolitan Magazine, Motor** and **Motor Boating** last year on which taxes were paid to the United States Government, were over *five times the annual interest* on this bond issue.

The **Cosmopolitan** bond subscription was opened on June 1, 1912, and as many have been subscribed for since that date, and inasmuch as they will probably be oversubscribed, the **Cosmopolitan** wishes to state that in case of such oversubscription the preference will be given to the regular subscribers and readers of the **Cosmopolitan.** After that the preference will be given in the order of the date of the subscriptions to the bond issue. The **Cosmopolitan** reserves the right, however, to reject any or all subscriptions.

These bonds offer as safe and solid an investment as can be found in the United States, and at the same time pay 6% interest.

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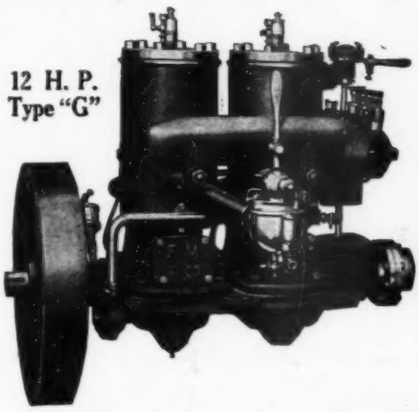
S. S. Carvalho, Treasurer, 238 William Street, New York City.

Fairbanks-Morse Marine Engines



12 H. P.
Type "G"

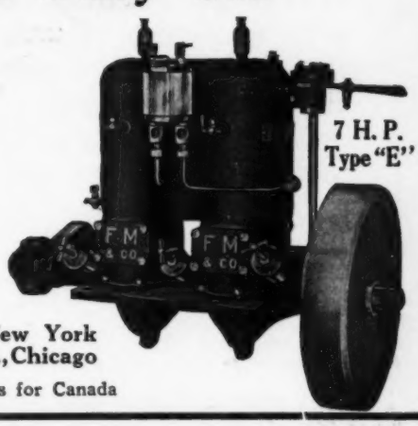
Two Cycle—3½ to 24 H. P.
For Pleasure Craft and Work Boats

Engines of unquestioned merit. Built by the oldest manufacturers of internal combustion engines in the United States. Fully guaranteed as to material, workmanship and power.

Over 125,000 Fairbanks-Morse Engines in Daily Use

All Fairbanks-Morse Marine Engines are simple, easy starting, compact. Working parts are easily accessible. They are remarkable for their reliability and economy in fuel consumption. Price reasonable.

Write for Catalogue No. DA1315, which describes our complete line in detail. Agents wanted.



7 H. P.
Type "E"

Fairbanks, Morse & Co., 30 Church St., New York
900 So. Wabash Ave., Chicago

The Canadian Fairbanks-Morse Co., Limited; St. John, N. B., Montreal, Toronto, Agents for Canada

Speed Increased 16⅔% Fuel Saved 30%
COYNE BOX TURBINE PROPELLER

Pat. Applied for.

SPEED POWER ECONOMY STRENGTH

Which of these appeals to you?

Of course you want the highest speed and the lowest fuel consumption you can secure, whether you have a launch, cruiser, hydroplane or commercial boat. Here is a way to greatly increase the efficiency of your equipment without changing your boat or installing a new engine.

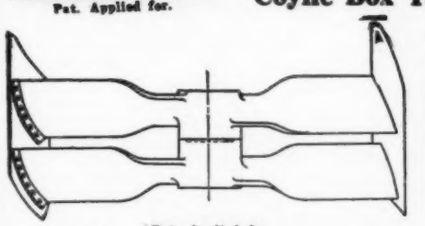
The Coyne Box Turbine Propeller is destined to revolutionize modern standards of wheel design for all types of boats from the little power canoe to the largest battleship. Actual tests by many experts on the Pacific Coast have shown wonderful results.

Naval architects, marine engineers, experienced propeller pattern-makers and boat owners who have tried this propeller report many exclusive advantages. Mr. John Wolff, designer of "Oregon Wolf," holder of world's championship for 30 miles against time, is building a Coyne Wheel for his new speed wonder and will also put one on "Oregon Wolf."

Full information upon application

W. E. S. COYNE, Grand Union Hotel, Suite 205, Kearny and California Sts.
Coyne Box Turbine Propeller Co. SAN FRANCISCO, CAL.

Pat. Applied for.



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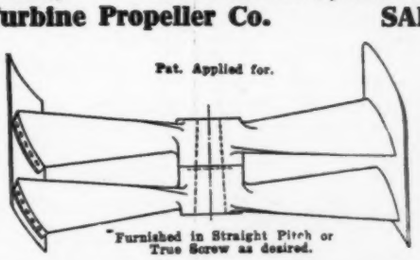

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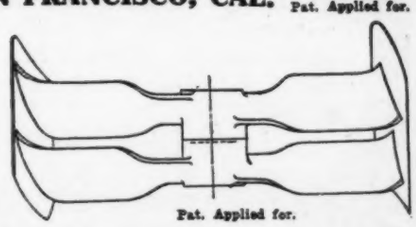
*Furnished in Straight Pitch or True Screw as desired.



Pat. Applied for.

Orders for the Coyne Box Turbine Propeller will be promptly filled by the following:

High Speed Propellers for hydroplanes, runabouts, launches, cruisers, etc., up to 3 ft. diameter.—J. C. Nieland Gas Engine Co., 1728 Bryant St., San Francisco, Cal.; Sweet & Raub, Marine Architects, Foot of Ash St., San Diego, Calif., builders of Speed Boats, Hydroplanes and Runabouts.

Propellers for tugs, launches and large ocean-going ships, over 3 ft. in diameter—Union Iron Works Co., 20th & Michigan Sts., San Francisco, Cal. Moore & Scott Iron Works and Ship Builders Co., Main & Howard Sts., San Francisco, Cal. Phoenix Iron Works, Hawthorne Ave. & E. 3rd St., Portland, Ore.

40 x 7 Ft. Raised Deck Runabout
A Whitaker boat built at Auckland, New Zealand for Mr. J. E. Phillips of Tahiti, South Pacific. Speed 20.93 knots. 90 H.P. Buffalo Auto-Marine Engine. Used in the open Pacific for running between different ialands. Mr. Phillips writes that this boat is very satisfactory

The only way to insure *complete satisfaction* in your next boat is to talk over your ideas with a competent naval architect and let him apply his specialized knowledge and experience to your individual requirements. With the same investment a boat can be made twice as serviceable — twice as valuable —if it is just right in every detail.

It is the architect's business to *know* where others guess. You can judge his ability to please you from his past work. You can see the economy of getting a good design by investigating the mistakes others have made. When making any investment it pays to make sure of securing the maximum value.

My experience in designing high-grade motor boats, from the small runabout to the biggest cruiser, is a guarantee of satisfaction. No architect or builder can point to a greater number or variety of notable successes. Boats built from my designs are in use in all parts of the world.

Start things by writing me at once. If you describe your requirements briefly I will submit sketches without charge or obligation, also refer you to boats I have designed before, similar to the type you want.

Please write today.

Morris M. Whitaker
Upper Nyack, New York

IF YOU INTEND TO TRAVEL

A Trip SOUTH or to CALIFORNIA

If you contemplate a trip South or to California during the Fall or Winter season and desire detailed information concerning hotels and transportation, you will avoid the loss of time and inconvenience by making your wants known at once to

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Your hotel and transportation accommodations should be arranged well in advance of a trip to New York city. Full and complete information regarding the leading hotels that offer the right accommodations to fit the purse will be promptly supplied upon request to

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Just supply us with general details as to your wants, giving the approximate rate you care to pay per day for each person, together with the general class of accommodations desired, and we will give your request prompt and careful attention, and furnish complete information as to desirable places and routes.

Make Your Wants Known Today — Write, Call or Telegraph

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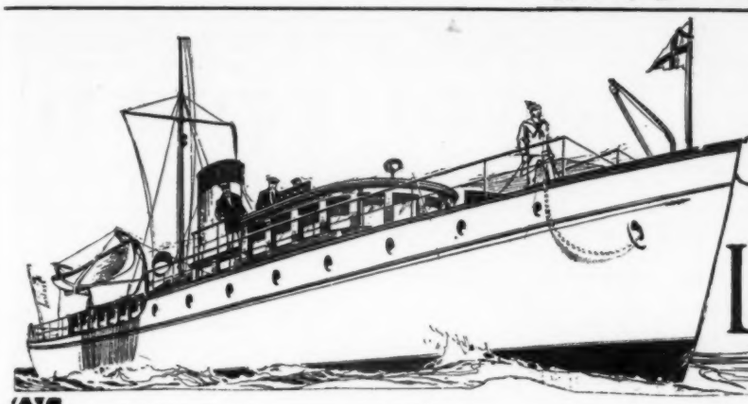


To Those Who Care For LAWLEY BOATS

None Finer Built Anywhere

"Lawley Built" Boats are conceded to be equal to the finest in the world. There is no higher expression in the art of boat building than the product of this organization

Motor Boats, Cruisers, Auxiliaries and Engines

We build all types of boats from a ten-foot yacht tender to the largest auxiliary yachts. Wood, steel or composite construction. We work from designs prepared under our own supervision or from your naval architect's plans as preferred. Every detail of construction from start to finish is handled within our own works.

Lawley facilities are unequalled. We have the largest and best equipped plant of its kind in America. Modern manufacturing methods and careful workmanship by experienced boat builders are responsible for our ability to maintain Lawley quality.

For those wishing a power equipment we can guarantee as unreservedly as our boats, we build Lawley Heavy Duty Motors. Four cycle, two, four and six cylinder, eighteen, thirty-six and fifty-four horsepower respectively. Also steam.

Correspondence solicited from prospective boat buyers. Our catalog sent on request.

GEORGE LAWLEY & SON CORPORATION

ESTABLISHED 1866

NEPONSET, MASS., U. S. A. Cable Address, "Lawley, Boston"

MOTOR BOATING

THIS PRIMING CUP GUARANTEED

AGAINST LEAKING, STICKING, SEIZING

ALL SIZES

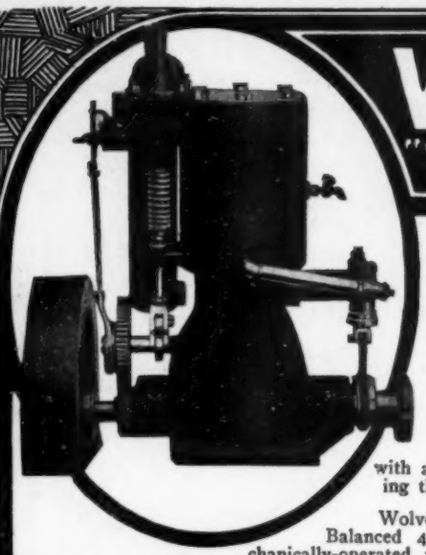
This is a great improvement over any other gas engine cylinder priming cup now in use. Overcomes all troubles and becomes of real value for priming, engine timing, compression release, etc. Made partly from steel so it can't break. Guaranteed against trouble.

Ground in Instantly

This cup is indispensable on every motor. Gives larger opening and requires less clearance than any other. All sizes and several finishes to suit everybody.

Write today for prices

MORGAN MFG. CO., JOHN ST., NEWPORT, R.I.



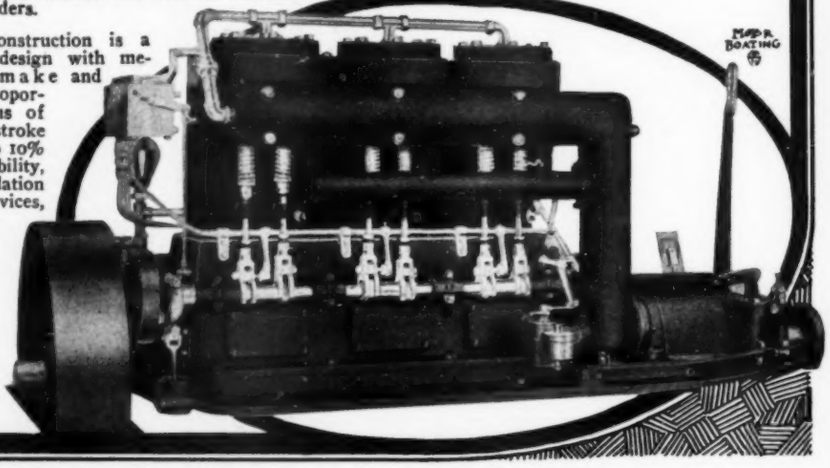
WOLVERINE

"THE MOTOR WITH THE BORE AND STROKE"

4-Cycle Engines Using Either Kerosene, Gasoline, Alcohol or Distillate

Wolverine Engines are built for the severest kind of marine work, and they consequently give a class of service that for reliability, power and economy is beyond comparison with ordinary types of marine motors. Nothing is sacrificed in their design or construction to meet the competition of cheaper goods, so they offer the greatest value in genuine engine satisfaction and service that can be bought at any price.

The ability to use kerosene, alcohol or distillate, as well as gasoline, is a valuable feature because Wolverine Engines are used in every part of the world. The prohibitive cost or impossibility of securing ordinary fuels enables the Wolverine owner to get full value in service and maximum economy regardless of local conditions. These various fuels give absolute success without resorting to outside fire, torches, pumps or similar contrivances, with a smokeless exhaust and without carbonizing the cylinders.



Wolverine construction is a Balanced 4-Cycle design with mechanically-operated valves, make and break ignition, mechanical lubrication and liberal proportions to insure strength, durability and a surplus of power. These engines have the largest bore and stroke for their rating of any built in America and develop 10% more horse-power than the rating. For accessibility, easy operation, economy and sensitiveness of regulation they are unexcelled. A large number of original devices, based on 20 years' experience, give Wolverine Engines a distinct advantage over all other marine motors of any type.

1, 2 and 3 Cylinders, 5-12-18-27-36-50-65-75-100 H.P.

Write to-day for Catalog No. 76

The Wolverine Motor Works

Bridgeport, Conn., U. S. A.

COLUMBIAN PROPELLERS

The Wheels That Drive Them All

From the **Fastest** that Goes to the Largest that Floats.

BABY RELIANCE II, the **fastest** motor boat in the world, was driven by COLUMBIAN PROPELLERS on her record trip of 46 miles in 60 minutes.

ALLEGRO, the **largest** motor yacht in existence, by changing to COLUMBIAN PROPELLERS increased her speed one knot an hour.

Universal Strut.

And so, you see, no matter what type boat you sail, the COLUMBIAN PROPELLER is the wheel you need—the wheel for speed as well as ease; the wheel for every type and size, and the wheel that is always right.

Besides Manganese Bronze Propellers we manufacture certain accessories in bronze that have points of superiority over all others.

Our booklet, **"PROPELLERS IN A NUTSHELL,"** tells all about them, and is beautifully illustrated. Write for a free copy to-day.

COLUMBIAN BRASS FOUNDRY

218 North Main Street, Freeport, Long Island, New York

LARGEST MANUFACTURERS OF PROPELLERS IN THE WORLD

"Extra Efficiency" Northwestern Motors

These engines are made in the most modern engine plant in the world.

Northwestern Motors are in use in every country in the world. They are in the fishing service on the Atlantic and Pacific Coasts in America, in Finland, Sweden, Norway, Holland, Belgium, Spain, Italy, etc., also in most of the South American Republics, in Hawaii, New Zealand, Australia, and the East Indies.

They are installed in Police and Government boats in some of the largest cities. Thousands of pleasure boats everywhere are equipped with the powerful and reliable Northwestern High Duty engines. The largest boat builders throughout the United States are specifying these motors in their stock boats.

2 H. P. Northwestern Motor

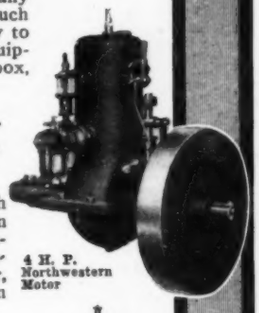
2 H. P. Northwestern Motor $39

The most startling engine offer ever made—a real engine, big and powerful, and not a toy in any sense. Compares in weight, workmanship and efficiency with engines costing nearly double. Do not confuse this engine with many of the cheap makes advertised at so much per pound. It is furnished complete, ready to install in your boat, including electric equipment, two propellers, shafting, stuffing box, wiring, switch, etc.

3 H. P. Northwestern Motor

3, 4, 6, 10, 20 H.P.—at proportionately low prices, depending on the equipment desired.

Northwestern Engines are strictly high duty, high grade in every respect, and can be furnished with practically any equipment desired, such as Reverse Gears, Reversing Propellers, Special Wico Ignitor, Magnetos, or Perfex Water Proof Ignition System.



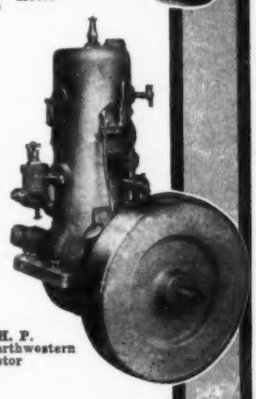
4 H. P. Northwestern Motor

THIRTY DAYS' TRIAL

We have a special proposition that we are going to make during the season of 1913, that will enable purchasers to try the engine out thoroughly at our risk, and if not absolutely satisfactory after thirty days of the most severe trial, it can be returned and money will be refunded without quibbling.

Gas-Tight Bearings

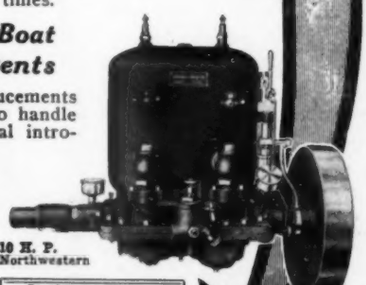
Northwestern Engines are manufactured under government patents No. 943, 790 and are the only two-cycle engines in the world made with absolutely gas-tight bearings in the crank case, one of the most valuable inventions in gasoline engine construction of modern times.



6 H. P. Northwestern Motor

Special Prices to Boat Builders and Agents

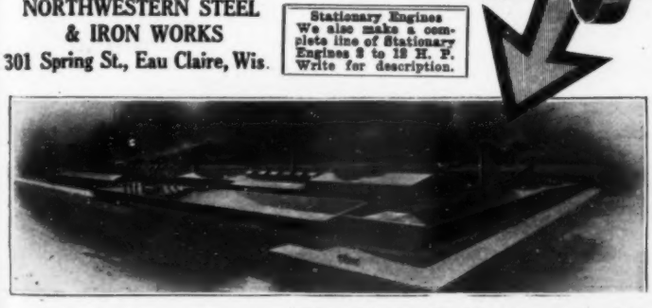
We are giving splendid inducements to boat builders and agents to handle our engines, and quote special introductory prices in localities where we are not already represented. Write for our Catalog, which is one of the most magnificent publications ever published.

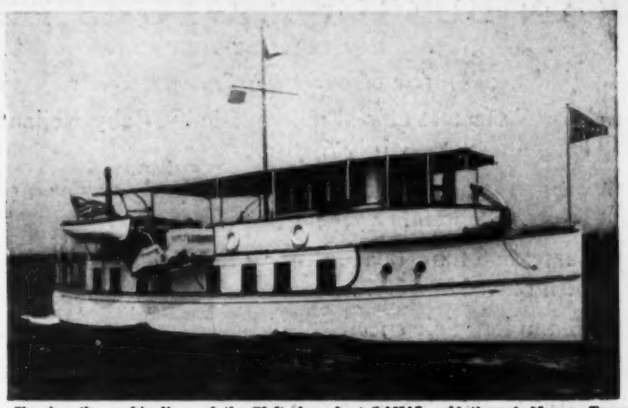


10 H. P. Northwestern

NORTHWESTERN STEEL & IRON WORKS
301 Spring St., Eau Claire, Wis.

Stationary Engines
We also make a complete line of Stationary Engines 2 to 12 H. P. Write for description.





Showing the yachty lines of the 70-ft. houseboat LANAI, sold through Messrs. Tams, Lemoine & Crane, to Ex-Com. A. C. James, of the New York Yacht Club. Duplicates in general layout the LUNARIA, also built and designed by us. Draught, 27 inches.

IT is less than three years since the Cocopomelo—which was designed and built by us—originated the type of shoal houseboat which combined comfort, "go-anywhereness" and real boat qualities.

So quickly were its advantages apparent that the next season saw several new Mathis-built houseboats in Florida—each a distinct improvement in type. The Ednada, which we completed nearly two years ago, set a standard for cruiser-houseboats that has hardly been approached by any other builder—that has certainly not been equalled.

The Nahmeoka has carried that improvement even further in the 95-foot class—a boat so replete with comfort, yet so yachty in its lines and ease of handling; so boaty in its simplicity as to be a revelation to the man who thinks that a houseboat must be a cumbersome, boxy floating residence.

The novel helmsman's stand on the 95-ft. houseboat NAHMEOKA, designed and built by us for Mr. H. N. Baruch, New York. Draught, 33 inches.

Among boats of the 70-ft. size, can you imagine a better combination of comfort, speed and yachty lines than is found in the Lanai, the Lunaria, the recently launched Calabash, or in the two seventy-footers now under construction in our yards?

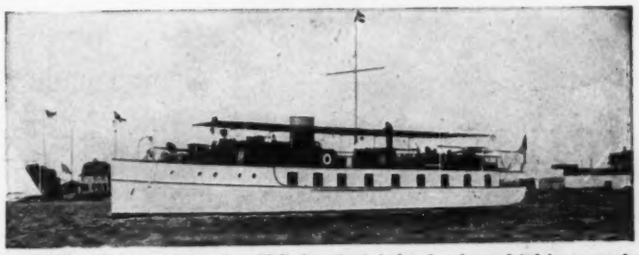
If you will visit us any time before Christmas, you can see for yourself these two new, distinctive boats, and compare our facilities for the building of boats between 60 and 120 ft. with those of the best yard you know.

Shall we send you further facts?

Mathis Yacht Building Co.

Specialists in 60 to 120-ft. Houseboats and Cruisers

COOPER'S POINT CAMDEN, N. J.



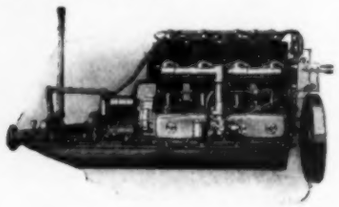
EDNADA III, shown below, is a 60-ft. houseboat designed and completed by us nearly two years ago, which originated the type of cruiser-houseboat equally at home inland or along the coast. Draught, 3 ft. 3 inches.

VAN BLERCK MOTORS HIGH SPEED MEDIUM DUTY

ARE IN A CLASS BY THEMSELVES

few of our High Speed Records

1. World's fastest official mile, made by Baby Reliance III, at Davenport, Ia. July 6, 1912.
2. Pacific Coast Championship, won by Vamoose, at Everett, Wash. September 7, 8, 9, 1912.
3. Fastest 26-foot boat in the world, Kitty-Hawk II, powered with one of our C-6 motors.
4. Champion high speed endurance run made by Charmalee, 208 miles, under adverse conditions, in 7 hrs., 13 min. October 13, 1912.



Power Plant of ROB ROY

Note symmetry and graceful lines.

REPRESENTATIVES:

Gasolene Engine Equipment Co., New York. Marine Equipment & Supply Co., Philadelphia, Pa. L. L. Tripp, Watervliet, N. Y. Gas Power & Supply Co., Portland, Ore. J. A. Moritz, Quincy, Ill. A. R. Williams Machinery Co., Toronto, Ont. H. C. Minett, Bracebridge, Ont. W. E. Baker, Montreal, Que. Nelson Sporting Goods Co., Nelson, B. C. Schultz Boat Works, Savannah, Ga. A. S. Maritim, Kristiania, Norway. Fred H. Hadfield, Auckland, N. Z.

ROB ROY, owned by A. F. Lambourne, of Pacific Gas & Electric Co., 13th & Clay Sts., Oakland, Cal.

Mr. Lambourne says:

"It gives me great pleasure to comment upon the Van Blerck motor.

"I have a 30-H.P. motor, model C, which will have been in use for twelve months on the 19th of November.

"We have made an ocean trip covering 200 miles, and experienced very rough weather, and can say that the motor never missed a stroke or caused us any trouble whatever. We also made a trip to Sacramento, covering 226 miles without a hitch.

"Now, from a user's point, I must say that the Van Blerck motors appear to be of the best that are made.

"If I build another boat requiring a medium-duty engine or motor, I would give the preference to a Van Blerck.

"I think that alone would be sufficient to justify my opinion of the Van Blerck motors.

"Yours very truly,

"(Signed) A. F. LAMBOURNE."

Write for our catalog

VAN BLERCK MOTOR COMPANY, - - 137 Leib Street, Detroit, Michigan

New York, Dec. 1st, 1912
Dear Sir:
Are you a Boat Owner? We sell everything for the Motor Boat at CUT RATE PRICES. We are New York's most popular dealer in Motor Boat, Automobile and Aeroplane Supplies at Money-saving Prices.
If you want QUICK SERVICE, BEST GOODS and LOWEST PRICES try us for your 1913 requirements.
Catalogue of either the above departments mailed FREE on request.
Established 19 years.
E. J. WILLIS CO.
New York
85 Chambers St.
67 Reade St.

EDISON BSCO PRIMARY BATTERY

The Standard Closed Circuit Cell

PURCHASERS of the necessities and luxuries of life can be divided into two general classes; the first buy intelligently, satisfying themselves that the material is best, not only for present but future requirements; the second give the matter little thought, neglecting to familiarize themselves with the proposition and usually regretting their carelessness later.

The first of these classes is the one we like to interest in Edison Primary Battery, the man who studies the difference between open and closed circuit cells; who knows from experience that ignition requires practically a constant flow of current and demonstrates to his satisfaction that a battery of the open circuit type cannot maintain its voltage when current is drawn from it continuously.

Turning to the Edison, he finds a high capacity cell built for continuous service which loses its energy only by having the current drawn from it, by the circuit in which it is connected, and does not depreciate while standing idle.

How long an Edison ignition battery will last depends on the constancy with which the engine is used and the current taken by the ignition circuit. On the average, a set of renewals lasts one year, but repeat orders are frequently accompanied by enthusiastic letters, advising that one set of renewals have given two, and in some cases three years' service.

While these reports of long life indicate comparatively light service, they are interesting from the fact that they prove the Edison Cell to be free from internal weaknesses which are common to other types of battery and sufficiently serious as to render them useless in a period of three years, even though no current is drawn from them.

Get catalog and information about Edison "Make and Break" Spark Coil.

The Cheapest Form of Battery Energy

THOMAS A. EDISON, INC.

261 Lakeside Avenue, Orange, N. J.

An Evinrude Race at Pewaukee Lake, Wis.

Your Row Boat a Motor Boat for $70

THERE is a certain keen pleasure in skimming over the water at an 8 to 10 mile an hour pace that is now offered to owners and renters of ordinary rowboats.

It is offered by a powerful detachable, 2-cycle motor that weighs but 50 pounds, is carried about in a canvas case like a satchel, and attaches to any rowboat in 30 seconds.

There are thousands of these portable motors in use on both salt and fresh water, and instead of an investment of several hundred dollars for a motor boat you receive a greater variety of pleasures with an

EVINRUDE
DETACHABLE
ROW-BOAT-MOTOR

for the small sum of seventy dollars.

This powerful motor which has been adopted by four governments is driven by a weedless propeller and furthermore so constructed that it is adjustable not only to depth but to the angle of stern of any rowboat.

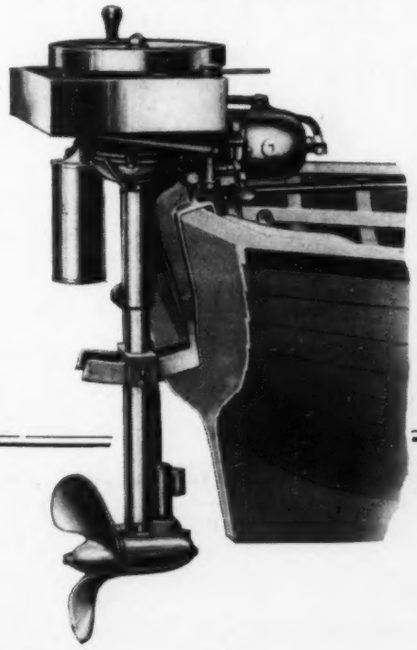
We want you to know more about this remarkable motor and with this in mind we have compiled an illustrated catalog showing its many uses which will be sent to you upon request.

EVINRUDE MOTOR CO.

401 Walker Street Milwaukee, Wis.

Members of National Association of Engine and Boat Mfrs.

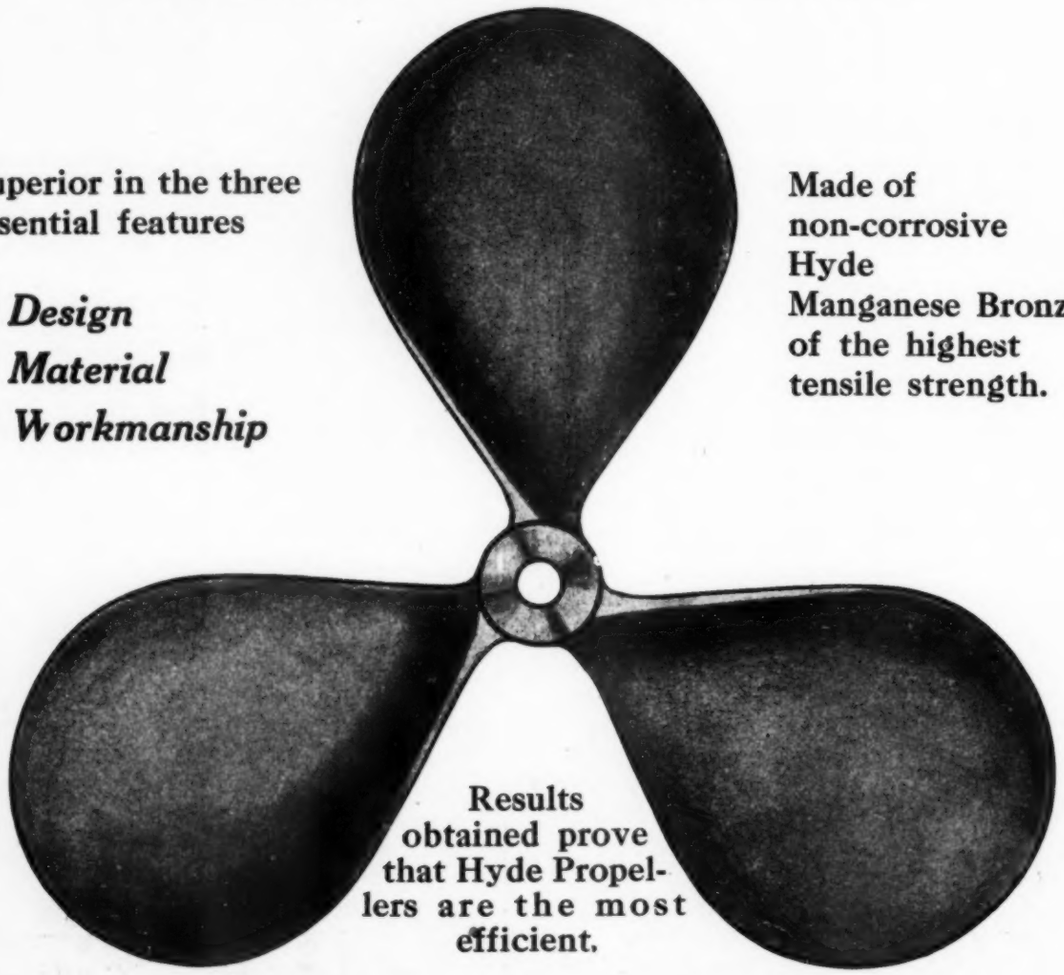
New York Salesroom: 260 W. Broadway



HYDE

TURBINE TYPE PROPELLERS

ARE UNEXCELLED FOR SPEED, PLEASURE OR WORKING BOATS



Superior in the three essential features

Design
Material
Workmanship

Made of non-corrosive Hyde Manganese Bronze of the highest tensile strength.

Results obtained prove that Hyde Propellers are the most efficient.

Equip your Motor Boat with

The Irish Pneumatic Clutch Control

The latest and most approved method of controlling the engine from the steering stand or station.

SEE OUR EXHIBITS AT THE

BOSTON AND NEW YORK MOTOR BOAT SHOWS

HYDE WINDLASS CO. BATH, ME.

THE MILWAUKEE YACHT & BOAT CO. takes pleasure in announcing the completion of its new shops on the Kinnickinnic river in the city of Milwaukee. These improved facilities will enable them to give unequaled service to their patrons in the building of boats of the highest quality.

THE main building is of steel and tile construction and is equipped with a traveling crane and the most improved machinery, all of which is electrically operated. A large yacht basin and marine railway capable of handling boats up to 125 tons displacement gives excellent facilities for the storing and launching of boats of all sizes.

The designing department is in charge of Mr. A. W. Crouch, a well known naval architect, whose services are at the disposal of their patrons.

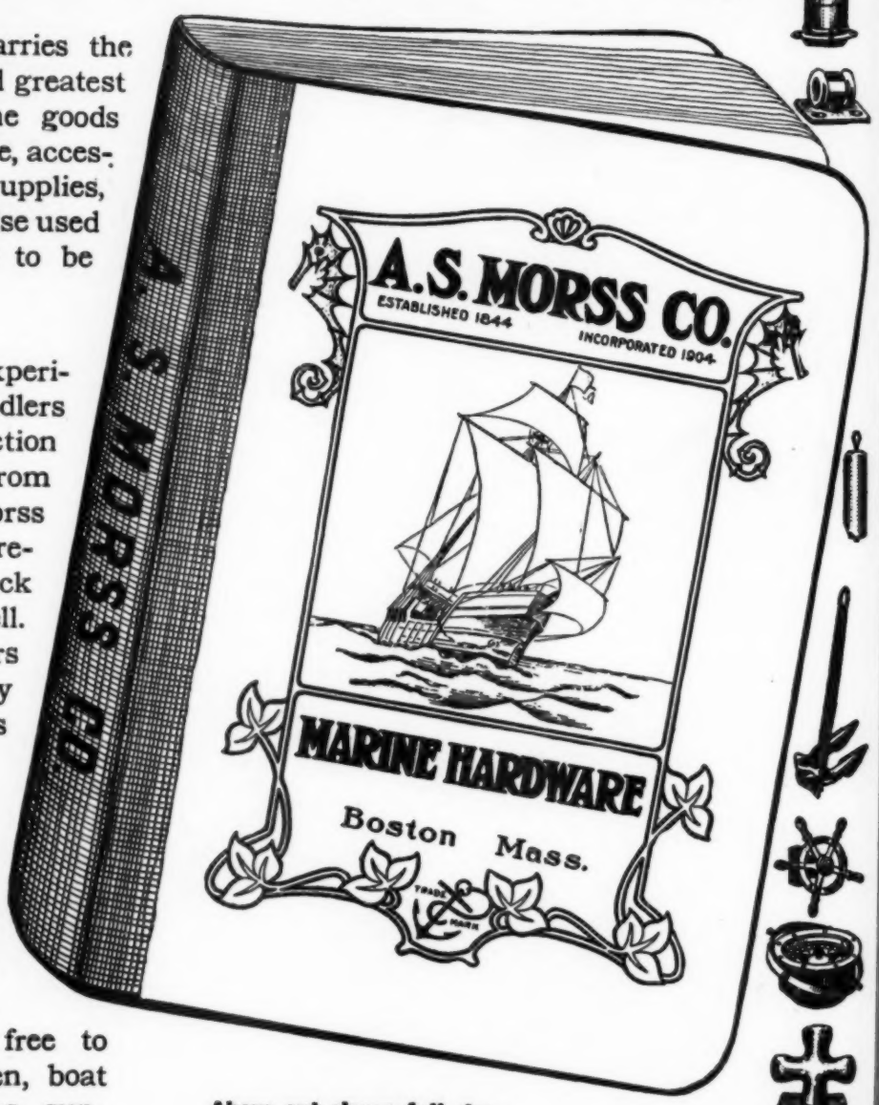
EVERYTHING

Anchor Your Faith to Morss Marine Hardware and You'll Never Slip Your Mooring

THIS company carries the largest stock and greatest variety of marine goods in the world. Hardware, accessories, equipment, supplies, tools, and everything else used on or about a boat is to be found here.

Sixty-eight years' experience as Ship Chandlers guarantees the satisfaction you will receive from Morss goods and Morss service. Quality and reliability is the policy back of every article we sell. We fill your orders promptly, and, quality considered, our prices are lowest.

Our 600-page pocket catalog is a complete dictionary of the marine supply trade, and contains much valuable information. Supplied free to boat owners, fishermen, boat builders, manufacturers, supply dealers, etc.



Above cut shows full size of catalog

Send six cents postage (to cover cost of mailing) for 1913 edition with discount sheet, ready January 1st. Write today.

A. S. MORSS CO., 43-45 High St., Boston, Mass.

WE BUILD SMALL BOATS AS WELL AS LARGE ONES

30-Foot Speedway Runabout

60-Foot Cruising Launch—Raised Deck

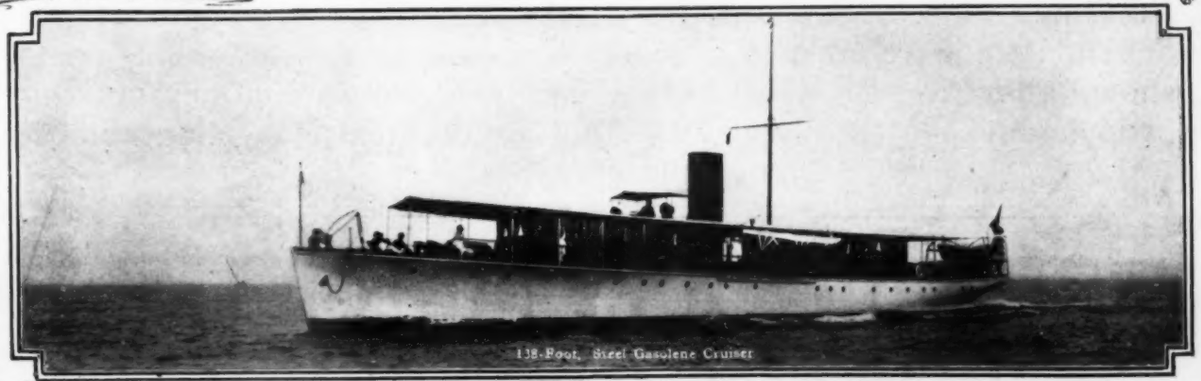
43-Foot Cruising Launch

It is not necessary for the man wishing a comparatively small boat to go to a small builder in order to get full service and attention. Every product of our plant, large or small, carries the assurance of satisfaction bestowed by our unequalled experience and facilities.

This company is the largest firm of its kind in the world—one of the few big enough to back up a broad guarantee on any boat we build. Over five thousand boats built in the past twenty-five years have made our work the standard of quality recognized the world over.

Before you buy or build a boat of any size or type let us submit sketches and estimates. No charge for making designs.

Gas Engine and Power Co., and Chas. L. Seabury & Co., Consolidated
Morris Heights, New York City



138-Foot, Steel Gasolene Cruiser

Photo Edwin Levick, N. Y.

A Portion of the Fishing Boats at Seabright, N. J.

The entire fleet during the past ten years has been using the Bridgeport motor in proportion at least four to one

WHY?

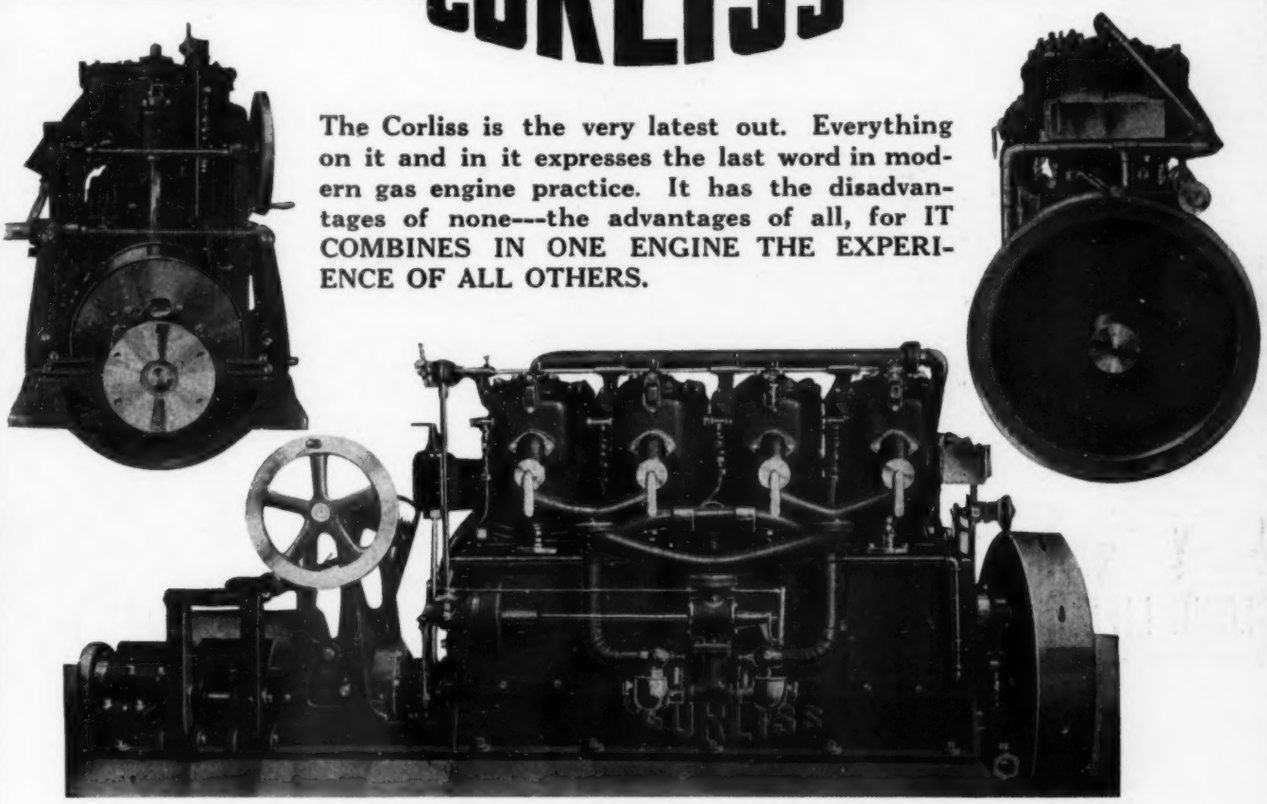
The BRIDGEPORT is not an inflated selling proposition. It is just exactly what we claim---the most highly perfected of its type, and constructed to withstand the hardest service. That's why the fishermen largely demand the BRIDGEPORT---their subsistence depends upon reliable and economical motor service. The boats shown above are BRIDGEPORT equipped, and are money-making propositions for their owners. Our motor is just as adaptable to your pleasure launch.

The Bridgeport Motor Co., Inc.

Bridgeport, Conn., U. S. A.

Don't Buy Any Engine Until You First Compare It With a

CORLISS



The Corliss is the very latest out. Everything on it and in it expresses the last word in modern gas engine practice. It has the disadvantages of none---the advantages of all, for IT COMBINES IN ONE ENGINE THE EXPERIENCE OF ALL OTHERS.

All Sizes, for All Purposes. 5 to 500 H. P. 1, 2, 3, 4 and 6 Cylinders

When You Look the Other Fellow's Engine Over

Ask if all Gears, even the Governor Balls, are enclosed, and run in a bath of oil, to reduce noise and eliminate danger.

Inquire whether Headless Set Screws are used wherever practicable, whether Flywheel Keys are protected by a Cap and Spokes by a "quick detachable" metal shield, to provide safety for the operator and surety for the owner.

Find out whether Pistons can be removed from above or below, whichever preferred.

Note whether cylinders are cast separately so that an accident to one wouldn't affect all.

See whether cylinder and cylinder head are cast separate from each other, so that a cracked head doesn't mean at least a new cylinder, or what is worse, a new set of cylinders.

Make certain that crank shaft can be lifted up clear of base, so that crank shaft bearings can be removed without interfering with cylinders or frame.

Ascertain whether it has a "closed base," as this means cleanliness and comfort. Cleanliness because no oil can be showered at random all over the engine room and its occupants—comfort, because the absence of smell and smoke insures an engine room that's fit to live in.

Investigate whether it runs like a "Stamp mill," or has, perhaps, some claim to quietness, because quiet means cruising comfort.

Examine all parts and see if they are instantly get-at-able and really interchangeable.

Get its bore, stroke, speed and rated horsepower.

THEN, having this information, carefully, point by point —part by part—

Compare It With a CORLISS *the Most Modern Motor Made*

CORLISS GAS ENGINE CO.

21-23 California Street
SAN FRANCISCO, CAL.

Grand Trunk Dock
SEATTLE, WASH.

AGENTS:

Nome, Alaska, Wagner Boat Co.
Valdez, Alaska, Valdez Iron Works.
Sitka, Alaska, H. L. Bahrt.
Skagway, Alaska J. M. Tanner.
Juneau, Alaska, Alaska Supply Co.
Petersburg, Alaska, Pacific Coast & Norway Packing Co.
Ketchikan, Alaska, Tongass Trading Co.
Vancouver, B. C., Momsen & Rowe.
Seattle, Wash., Harris, Surface & Cameron.
Hoquiam, Wash., Lamb Machine Co.
South Bend, Wash., South Bend Machine Works.
Portland, Ore., Gas Power & Supply Co.
Los Angeles, Cal., Hatfield Machinery Co., 306 East Third St.
Honolulu, T. H., Henry E. Walker.
Suva, Fiji Islands, S. A. Griffen.
Sydney, Australia, Alfred Harvey & Co.
Melbourne, Australia, Alfred Harvey & Co.
Adelaide, Australia, Alfred Harvey & Co.

ATLANTIC COAST AGENT.
C. A. North, Home Life Bldg., Washington, D. C.

ANDERSON

Glass and Steel Spark-Plugs

HAVE THE REPUTATION OF MAKING GOOD

Seven Reasons Why

First, The Anderson Spark Plug is absolutely the strongest and most enduring plug on the market; *Second*, it provides for the maximum of insulating distance within the limits of a Spark Plug; *Third*, practically speaking, it is one piece; *Fourth*, it is absolutely gas tight under the highest pressure; *Fifth*, it is a perfect non-absorbent of moisture; *Sixth*, it is the most perfect insulator of electricity known; and *Seventh*, this Plug is a *"window in the engine,"* which provides an ocular means of regulating the explosive compound.

GLASS AND STEEL WELDED INTO A SOLID INTEGRAL MASS

LONG LIFE

A WINDOW TO THE ENGINE

GLASS AND STEEL WELDED INTO A SOLID INTEGRAL MASS

LONG LIFE

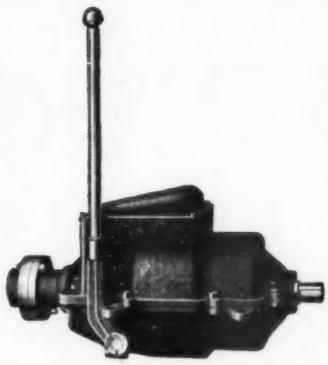
A WINDOW TO THE ENGINE

Better Pay $1.50 Once THAN A DOLLAR A DOZEN TIMES

ALL SIZES

Anderson Spark Plug Co.

206 N. Holliday Street Baltimore, Md.



"The gear to bear the wear and tear"

Don't buy a boat till you're sure it's safe

When you buy a boat see that it is controlled by a "Baldridge." If not, it will pay you to insist on it; *i. e.*, if you value the safety of your boat and all who may use it. The reason is simple. The "Baldridge" gives you automobile-control of your boat—stop, go ahead or reverse by natural, easy movements of a single lever. It compensates for the dangerously slow and inflexible control of the ordinary marine engine.

This gear is as good as the engine you build

Our proposition to engine builders is worth careful investigating. Get it. 80% of our trade is with engine builders who are cashing in on the neat, compact appearance and the well-proved reliability of the "Baldridge." All this helps sell engines. It will help sell *yours*.

The "Baldridge" is used by high-class American, British and Continental engine builders. *And you ought to know why.*

With a large factory producing reverse gears exclusively, we have developed quantity production and special processes, enabling us to build better gears than you could, and make a profit at prices lower than your cost of production.

Ready for 1913 Export Business

The gear that meets the requirements of fishing fleets from Norway to Japan, from Lands End to the Falklands—and is found in pleasure craft from the Thames to Sydney Harbor—must have unusual merit. It will certainly meet your requirements. Address our Export Office, 47 Broadway, New York.

Gentlemen, the 1913 Model of this Gear Is a "Wonder"

OUR previous models well merited the praise of thousands of users in the United States and abroad. And they got it. They were splendid examples of practical design and thorough workmanship.

But we predict a more enthusiastic reception of the 1913 "Baldridge." It contains all the good features of the 1912 model with many refinements and improvements that place it beyond criticism. The gear is entirely enclosed—shaft extends unbroken entire length of gear—alignment is absolutely permanent.

Baldridge Reverse Gear

Control lever is operated perfectly natural—throw it forward to go ahead, and backward for reverse. Quiet running, neat and compact appearance, and thorough lubrication have ***always*** been features of the "Baldridge."

Write for details and specifications

¶ Our 1913 national publicity campaign will tell the good news of "Baldridge" reliability to millions of readers—thousands of prospects; some in your town. If you want more business, write for Dealer's Proposition.

The Baldridge Gear Company

678 West Grand Blvd., Detroit, Mich.

EXPORT OFFICE: 47 BROADWAY, NEW YORK, U. S. A.
J. E. Sitterley, Foreign Sales Mgr.

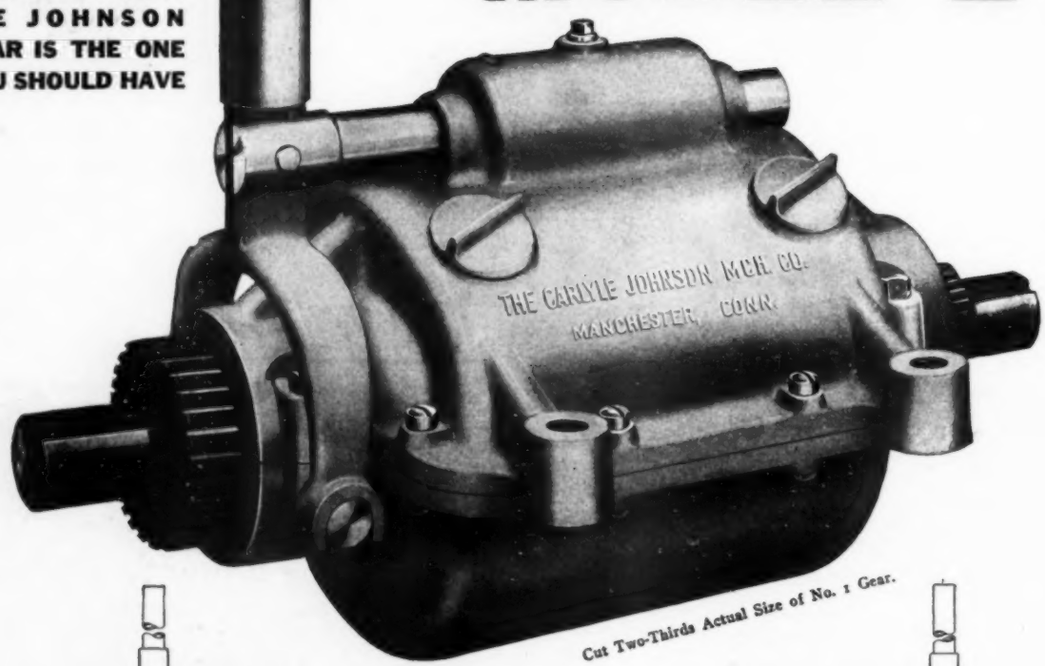
THE JOHNSON MARINE REVERSE GEAR

THREE SIZES

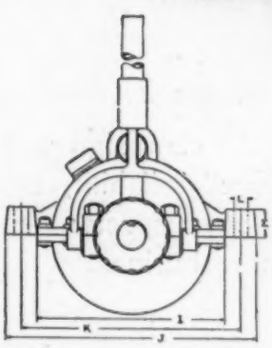
FROM 1 TO 40 H.P. AS LISTED BELOW

EVERY 1912 USER A SATISFIED OWNER. ASK THE MAN WHO OWNS ONE, AND BE CONVINCED THAT THE JOHNSON GEAR IS THE ONE YOU SHOULD HAVE

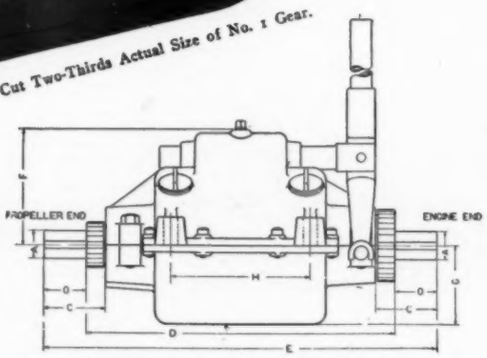
A VANADIUM STEEL GEAR FOR 1913 IN A NEW TYPE "MODEL E"



Cut Two-Thirds Actual Size of No. 1 Gear.



FULLY GUARANTEED FOR ONE YEAR

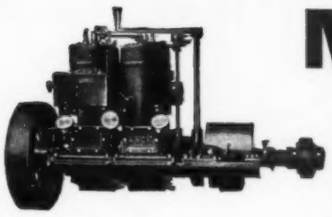


Gear No.	H. P. Per 100 R. P. M.	H. P. For High Speed Motors Max.	H. P. For Slow Speed Motors Max.	WEIGHT Cast Iron Case	WEIGHT Aluminum Case	List Price for Cast Iron Case	List Price for Aluminum Case	DIMENSIONS IN INCHES A	C	D	E	F	G	H	I	J	K	L	M	O	Spline for a Sq. Key in Eng. and Prop. Shaft Wide	Spline for a Sq. Key in Eng. and Prop. Shaft Deep
0	½	5	3	21	18	$24.00	$36.00	⅝	1 1/8	10 3/4	13 1/4	3 5/32	2 1/4	4 1/2	5	6 1/2	5 3/4	2 1/64	1/2	1 1/4	1/8	1/16
1	1½	15	7	35	30	36.00	48.00	1	2 3/16	10 1/16	13 1/16	4 5/8	2 3/8	4 1/16	6 5/8	8 7/8	7 3/4	2 33/64	1	1 1/2	1/4	1/8
2	3	40	20	90	75	48.00	60.00	1 1/8	2 1/16	15 1/2	19 1/2	5 1/4	3 1/16	6 1/2	8 5/8	11 3/8	9 7/8	2 1/64	1 1/8	2	1/4	1/8

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

KNOX

"THE MOTOR THAT CROSSED THE ATLANTIC"

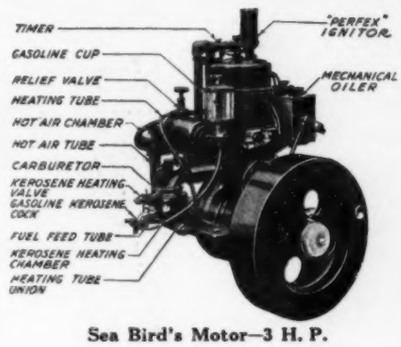


MARINE MOTORS

100% Interest Guaranteed on Your Investment, in Less Than Twelve Months

We simply mean that Knox Motors will save you that much on fuel bills alone. They run as well on kerosene, alcohol, or distillate as on gasoline. Kerosene costs 8 cents per gallon or less. Gasoline costs 18 cents per gallon or more.

The wonderful Knox Carburetor gives perfect results with these fuels. Once adjusted it insures full power, smooth operation and reliable service. We guarantee satisfaction.



Sea Bird's Motor—3 H. P.

Every Knox Motor has the same reliability and durability as the little single cylinder 3 H.P. Knox which drove the 25-foot auxiliary yawl "Sea Bird" across the Atlantic on the most phenomenal voyage ever recorded for a boat of this size. These motors are of the two-cycle, three-port type, having maximum simplicity, low first cost and remarkable wearing qualities. One cylinder, 3, 4½, 5½ and 7½ H.P. Two cylinder, 7, 9, 11 and 15 H.P. Three cylinder, 16 and 22 H.P.

We build our heavy duty motors of the four cycle type, cylinders 7" x 8", cast in pairs, the two cylinder model having 20 H.P. and the four cylinder 40 H.P. Reverse gear built integral. Sold with complete equipment, ready for installing.

KNOX YAWL LAUNCHES

The strongest and most seaworthy launches ever built in stock models. Five sizes, 19', 22', 25', 28' and 30', all except the smallest model being supplied with either trunk or hunting cabin as well as all open cockpit. Shallow draft, flat bottoms, therefore ideal for rivers and lakes. Each model is powered with the proper sized Knox Motor.

A 40 foot Knox Cruiser built last season.

We furnish Knox Yawl launches in two grades; our grade B being equal to any other stock boat on the market. Our grade A is more expensively and luxuriously finished with the finest materials and workmanship throughout. We are equipped to build any style or grade of boat from 19 to 120 foot. Sketches and specifications gladly submitted on request.

25 foot Knox Yawl Launch. 16 H.P. Knox Motor. Speed 11 Miles.

Write today for latest catalog of Knox Motors and Knox Yawl Launches. Don't buy any boat or motor until you have these valuable books.

CAMDEN ANCHOR ROCKLAND MACHINE CO.
Camden, Maine, U.S.A.
Branches—180 State St., Boston, Mass.; 99 East Bay St., Charleston, S. C.; 36 Coleman Dock, Seattle, Wash.

"The Automatic"

Four Cycle MARINE ENGINES

incorporate features that are essential for the production of efficient power—simplicity of construction—reliability—economy in fuel consumption.

They have proved their ability to work under all conditions day after day—not alone by private tests but in hundreds of pleasure and commercial boats in daily use. Steady, dependable service with low operating cost. That's what you want—and that's what you get when you buy an Automatic.

Examine the Automatic carefully—compare it with any other marine engine that is made—and you will find that it represents real dollar for dollar value for your money. It is built entirely in our own plant—the largest in the country devoted to the production of four cycle marine engines. All gears are cut from solid steel blanks. The crank shaft is hammered—not drop forged. The reverse gear is powerful and dependable—built on the engine bed.

And last, but not least, every multi-cylinder Automatic is regularly equipped with make and break and jump spark ignition systems, with gear driven high tension magneto.

The Automatic is built in sizes ranging from 3 to 250 H. P. Tell us what your requirements are and let us send you specifications of any size in which you are interested.

The Automatic Machine Co.

Bridgeport **Connecticut**

REALIZING that motor boat bugs are discriminate buyers, we have exerted every effort to produce a marine motor of unusual efficiency.

In this we have been successful. Thousands of well pleased patrons support this truth.

Ever on the alert to improve upon even a product already in a high state of perfection, we directed the attention of our experimental laboratories to KEROSENE as a fuel for ——

Roberts REFINED MARINE Motors
"THE MOTORS THAT NEVER BACKFIRE"

We now present our entire line for efficient KEROSENE operation. Efficient (50% saving) in the truest and fullest meaning.

With gasoline sky-high — think this over.

Twenty one models give a good selection in Standard, Aerolite and Featherweight types.

Our catalogue will be mailed upon request.

An excellent sales plan for wide awake men

THE ROBERTS MOTOR CO.

SANDUSKY, OHIO, U.S.A.

"SANDS" MARINE SANITARY FIXTURES

LOOK AT THEM!

MADE TO SUIT DIFFERENT CONDITIONS AND BY PEOPLE WHO KNOW HOW

SOME ARE LATE DESIGNS, OTHERS HAVE BEEN POPULAR FOR 30 YEARS

All are guaranteed without reserve.

Prices are reasonable.

Workmanship "SANDS STANDARD."

"NATIONAL" PLATE S-2010.

(Patented—Copyrighted.)

The "National" Pump Water Closet has extra heavy Vitro-Adamant Oval Flushing rim Pedestal bowl fitted with 5" combined supply and waste pump.

Complete with Mahogany seat and cover. Pump white enameled, N. P. trimmings.....$145.00

Boat Builders, Owners and Designers prefer them.

There are none made "Just as Good."

"FLORIDA," PLATE S-2015.

(Patented—Copyrighted.)

The "Florida" Pump Water Closet has new style extra heavy oval pedestal Vitro-Adamant bowl. Improved supply and waste pump having four (4) inch cylinder.

Complete with Mahogany seat and cover. Pump white enameled, N. P. trimmings.....$112.00

[Sanitation on your [vessel is just as important as in your home.

"HURON." PLATE S-2035.

(Patented—Copyrighted.)

The "Huron" Pump Water Closet has new style extra heavy Vitro-adamant flushing rim hopper bowl. Five (5) inch combined supply and waste pump.

Complete with mahogany seat and cover. Pump white enameled, N. P. trimmings.....$132.50

Be popular and insist on a "Sands" Fixture.

It will pay you in the long run.

"IOWA." PLATE S-2040.

(Patented—Copyrighted.)

The "Iowa" Pump Water Closet has latest style Vitro-adamant extra heavy oval flushing rim, straight back hopper bowl, fitted with 4-in supply and waste pump.

Price with quartered oak, cabinet finish seat and cover, pump rough with polished trimmings.....$55.00

"MANOR." PLATE S-26.

The "Manor" Pump Water Closet with 4-inch Combined supply and waste pump, oval pedestal, Vitro-adamant bowl, polished quartered oak seat and cover, automatic safety water supply foot valve.

Complete $100.00
Mahogany seat and cover add.... 2.00

"ARBUTUS" —PLATE S-20.

The "Arbutus" Pump Water Closet, with Vitro-adamant oval flushing rim pedestal bowl, combined supply and waste pump. Oak seat and cover, nickel-plated hinges.

Pump and fittings polished and nickel-plated all over; white enameled iron base plate.....$115.00

"IMPROVED MOHAWK," PLATE S-2030.

(Patented—Copyrighted.)

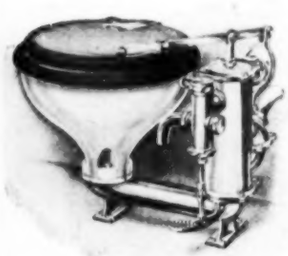
The "Improved Mohawk" Pump Water Closet, extra heavy Vitro-adamant oval flushing rim hopper bowl. Composition supply and waste pump three (3) inch cylinder.

Pump rough with polished trimmings, oak seat and cover.....$70.00

"MARCO." PLATE S-28.

The "Marco" Improved Pump Water Closet with Vitro-adamant oval pedestal bowl, oak seat and cover, Improved 3-in. combined supply and waste pump, pump rough.

Complete as shown.....$75.00
Mahogany seat and cover, add..... 2.00



"KNOCKABOUT." PLATE S-34.

The "Knockabout" Improved Pump Water Closet, round flushing rim bowl, composition foot valve, hinges.

Pump rough, finished trimmings, oak seat and cover.....$52.50
If mahogany seat and cover, add.. 1.50

Weight: Net, 45 lbs.; Gross, 75 lbs.

THE "BOW" CLOSET. PLATE S-2050.

(Design Patent Applied For.)

The "Bow Closet," Vitro-adamant bowl. 2½-in. pump, located at rear, fitted with swing handle. Quick opening supply valve. Space occupied, 15 x 24 in.

Pump rough, with finished trimmings, oak seat, N. P. Hinges.....$30.00

Dimensions: Front to back 23 in., width 14 in., height 12 inches.

Net weight, 35 lbs. Shipping, 70 lbs.

"MALTA." PLATE S-44.

The "Malta" Pump Water Closet, round flushing rim bowl, composition supply and discharge pump, quick-opening supply valve, N. P. hinges.

Pump rough, with finished trimmings, oak seat.....$30.00
If with mahogany seat, add..... 1.00

Dimensions: 14 in. back to front, 18 in. wide, 13 in. to top of seat.

"CRUSOE." PLATE S-40.

The "Crusoe" Water Closet, with Vitro-adamant round flushing rim bowl. Combined supply and waste pump. Lever handle supply valve. Oak seat and cover, with N. P. hinges.

Pump as described, with finished trimmings $42.50
Pump white enameled, N. P. trimmings, add..... 5.00

Complete line of closets, lavatories, port lights, deck plates, basin and galley pumps described in Catalog "R" sent upon request.

A. B. SANDS & SON COMPANY

Largest Manufacturers in the World **MARINE PLUMBING SPECIALTIES** 22-24 Vesey St., New York, U. S. A.

1849 — "PIONEERS FOR OVER SIXTY YEARS" — 1912

THE RECOGNIZED STANDARD of the WORLD

THE PEOPLE'S CHOICE BECAUSE OF THEIR MANY SUPERIOR QUALITIES

Finest Folding Lavatory Ever Produced

"SANDS" HIGH QUALITY GIVES SERVICE AND SATISFACTION

PLATE S-151.

The "Roslyn" Folding Lavatory, with tumbler rack; N. P. copper lining; N. P. Copper combined round basin and slab; N. P. copper soap and brush holders; N. P. brass pump with combination brass swing supply faucet.

Made in Two Sizes	No. 1	No. 2
Quartered oak, polished finish	$37.50	$42.50
Mahogany, polish finish	39.00	44.50
Height	19½"	22"
Width	15 "	17"
Depth, open	16½"	19"
Diameter of basin	10 "	12"

The "Hobron" Vitro-Adamant Glazed White All Over Folding Lavatory, N. P. brass supports and bulkhead brackets. N. P. brass combination self-closing faucet for hot and cold water. Complete $45.00

Weight, Net 45 lbs.; Gross, 75 lbs.

Dimensions: Height over all 26½ inches; width, 16½ inches; depth open, 17 inches; depth closed, 7 inches.

PLATE S-145
(Showing New Catch.)

PLATE S-150.

The "Glenwood" Folding Lavatory, with Vitro-Adamant roll rim tipped oval basin, N. P. copper lining, soap and brush holders, N. P. brass pump with combination swing supply faucet, N. P. brass towel rack, N. P. brass supply and waste couplings, N. P. brass trimmings.

Quartered oak, polished finish $42.50
Mahogany, polished finish, add 1.50

This lavatory can be fitted with single faucet for cold water only, with pump to take supply from tank in any part of vessel, or with overhead tank to supply by gravity. Can also be furnished with all metal parts made of our special "Silvonel" metal, which is very hard and tough, requiring polishing only and has a finish resembling silver plate. This metal is non-corrosive and very high grade.

PLATE S-3056.

Folding Lavatory, adjustable beveled French plate glass mirror; glassware rack; zinc reservoir and waste receiver; zinc lined painted white enamel; vitro-adamant large basin with splash rim; china soap and brush holders; nickel-plated brass self-closing supply faucet; nickel-plated brass trimmings.

Polished Quartered Oak	$52.50
Polished Mahogany Woodwork	60.00
Copper Reservoir and Waste Receiver, add	5.00
Cut Glass Carafe and Cut Glass Tumbler	4.00

Dimensions: Height, 66" over all; width, 20" over all; depth, when closed, 8"; depth, when open, 22"; capacity of tank, 5 gallons.

This fixture is highly polished and well made. The basin is secured to drop and made watertight.

This lavatory is intended to stand on floor of stateroom; it is fitted with a space having large storage space for shoes or toilet articles.

PLATE S-776.

Brass Gasoline Pump, rosewood handle, polished faucet, special valves, 2-inch cylinder.

Rough $9.00
N. P. all over 10.50

PLATE S-702.

Polished brass Basin Pump, 1½" diameter cylinder, hardwood handle

Polished $10.50
Polished and N. P. 12.50

PLATE S-708.

All Brass Galley Pump for bulkhead, 1½-inch Cylinder, reversible handle

Polished all over $7.50
N. P. all over 9.00

PLATE S-160.

The "Hampton" Vitro-adamant Lavatory, with overlap slab, oval basin and integral brackets, nickel-plated brass plug, rubber stopper, chain and chain stay, nickel-plated brass screws and washers to fasten to bulkhead. Vitro-adamant reservoir with slotted ears, nickel-plated brass self-closing push button supply cock. Vitro-adamant waste receiver with nickel-plated brass lock waste valve with key.

Complete $24.00

Dimensions: Slab 16½" x 15½", back 5", basin 14" x 11" with rear outlet. Capacity of reservoir 3 gallons. Reservoir and waste receiver can be removed readily for cleaning.

This fixture is designed to be strictly sanitary, and makes a very desirable combination. The lavatory has overlap slab, preventing splashing.

PLATE S-771.

Brass Gasoline Pumps with special valves and clamps.

Diam.	Long	
1⅛	15	$5.00
1½	15	7.00
2	24	13.00

PLATE S-1285.

Motor Boat Signal Two-Tone Horn with mouthpiece. Fulfills the U. S. Government requirements as signaling device for small boats. Highly polished brass and nickel-plated. Length 10¾ inches.

Style "A"—Arranged with rings for fastening cord. German Silver mouthpiece.
Polished Brass $2.25

Style "B"—Arranged with bracket to screw to deck; blown through Removable Extension tube.
Polished Brass 2.25

Mohair-Covered Rubber Extension Tube, length 3 feet, with Mouthpiece and connection to horn 0.75

PLATE S-132½.

All Cast Bronze Heavy Pattern Combination Inlet Connection, with Strainer and Scoop.

Size	Iron Pipe.	Lead Pipe.
½"	$2.25	$2.65
¾"	2.50	2.90
1 "	3.00	3.40

PLATE S-126.

The "Glenora" Composition Flange and Coupling for use on supply and discharge pipe of closets, straight or bent coupling.

	Price
¾"	$2.25
1 "	3.00
1½"	5.25
2 "	8.00

Composition raised strainers 25c extra.

PLATE S-130 C.

Cast Bronze Strainer and scoop used over inlet to engine. Made in three sizes and packed with screws.

No. 1 2½" x 3½"	$ .50
No. 2 2 " x 4 "	.75
No. 3 3¾" x 5 "	1.00

N. P. Compression Faucets, each 1.50
N. P. cock hole cover, each ..... .40
Smallest basin made. Length on sides, 12 in., basin, 10 in.

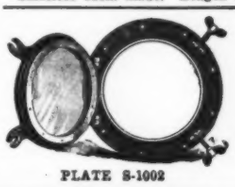


PLATE S-1002

Round Flange Composition Monitor Air Ports, with heavy brass frame and hinge to give sufficient rigidity to prevent springing and breaking the glass.

Diam. of Opening.	Price Plain.
4 in.	$4.00
5 in.	5.25
6 in.	7.00
7 in.	8.75
8 in.	10.75

PLATE S-235.

The "Ranco" Vitreous China Lavatory with "Sanos" patent overflow, N. P. brass chain stay with rubber stopper.

Complete as described ... $6.25
each 1.50

PLATE S-750-A.

New Style Double-Acting Brass Bilge Pump, with foot attachment and 5-foot discharge and suction hose with brass strainer.

No. 1	— Chamber 1¼-in. diameter. 15 in. long	$5.00
No. 2	— Chamber 1¼-in. diameter, 15 in. long	6.50
No. 3	— Chamber 2-in. diameter, 24 inches long	14.00

Full Line of Ventilators, Bath Tubs, Showers, Basins, Sinks, Gasolene and Bilge Pumps Shown in Catalog "R" Free Upon Request.

A. B. SANDS & SON COMPANY

Largest Manufacturers in the World **MARINE PLUMBING SPECIALTIES** 22-24 Vesey St., New York, U. S. A.

1849 — "PIONEERS FOR OVER SIXTY YEARS" — 1912

PEARL GEARLESS

IF YOU ARE INTERESTED

Anyone owning a **Motor Boat** equipped
be **vitally** interested in **Pearl Gearless**
innovation and departure from the
verse gears of past decades. There
and cones, which compels it to
and powerfully with no noise

It **can accomplish** what
It can, if necessary — in
in **reverse** motion from

50% to
of forward

Water, oil or gr
it — **Efficiency**
100% — Co
determine
— Made
— Pr
li

The 1913 Model of

Pearl Reverse Clutch

Is Fitted With An Aluminum Cover, Which Protects Its Mechanism and at the Same Time Is Very Ornamental.

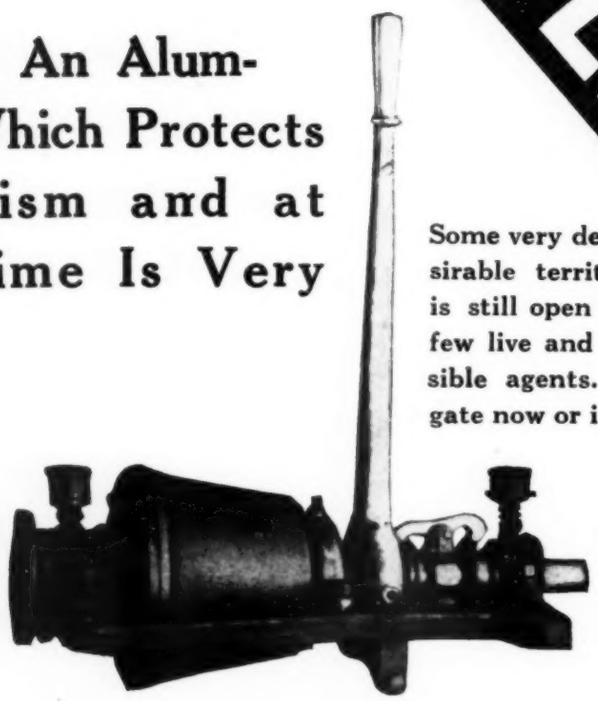


Illustration of Clutch exposed.

Some very desirable territory is still open for a few live and responsible agents. Investigate now or it may be too late. Interesting proposition.

Send for catalog and further information

PEARL MACHINE COMPANY,

Sole Manufacturers (Formerly Elliot

REVERSE CLUTCH

with a modern gasoline motor should **Reverse Clutch,** as it is absolutely an troublesome and unreliable re- is **not one** gear in it—only rollers grip smoothly, instantaneously whatsoever.

no reverse gear can do— **stantly** send the propeller

75%

speed

ase does not affect **of Clutch is** es and rollers horsepower in all sizes mpt de- eries

WRITE TO US IMMEDIATELY

Below You Will Find Parts of Pearl Gearless Reverse Clutch Exposed. These Parts, Together With All Materials Used In Its Manufacture, Are the Best Obtainable.

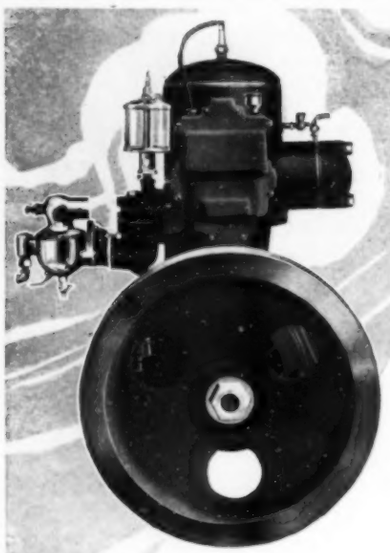
Every Clutch That Leaves Our Factory We Will Guarantee for One Year.

PARTS OF CLUTCH

All 1913 Models Have Aluminum Covers.

220 West Elizabeth Street, Detroit, Mich., U.S.A.

Machine and Manufacturing Company)



1913 CAILLE PERFECTION

$500,000 Backs The Guarantee of Every Caille Perfection Motor

And that guarantee means exactly what it says—"This half-million-dollar institution stands back of every Caille Perfection motor for life and will make good any defects caused by faulty material or workmanship which may reveal themselves at any time."

Caille Perfection motors have been in service for ten years in every section of the world. Hundreds of letters praising the efficiency of the Caille motors come to us every month. If satisfactory and consistent service is what you want, buy a Caille Perfection motor and feel assured that you are dealing with a permanent institution.

Perfection Igniter was the 1912 Sensation

No batteries, no coil, no magneto, no timer—not one part to get out of order.

Simple, water-proof, trouble-proof and reliable, this new ignition system was the sensation of the past season of 1912.

Caille Perfection Motors are built in 2 to 30 horsepower sizes, one to four cylinder. Suitable for canoes to 60 footers.

Prices from $45.00 upward.
Big Marine Motor book free.
Write to-day.

BUILT IN DETROIT BY Expert Automobile Mechanics

The famous Caille Perfection motors for 1913 are built by men who have had years of experience in accurate automobile manufacturing. They are men who are used to working to accurate limits—men who are trained experts—men who have made gas-engine building their life work. That's why Caille motors are so well made, efficient and reliable.

The famous **Perfection**, 8-horsepower, heavy-duty motor is typical of the superiority of the entire Caille family.

Abuse, over-work, neglect don't effect it.

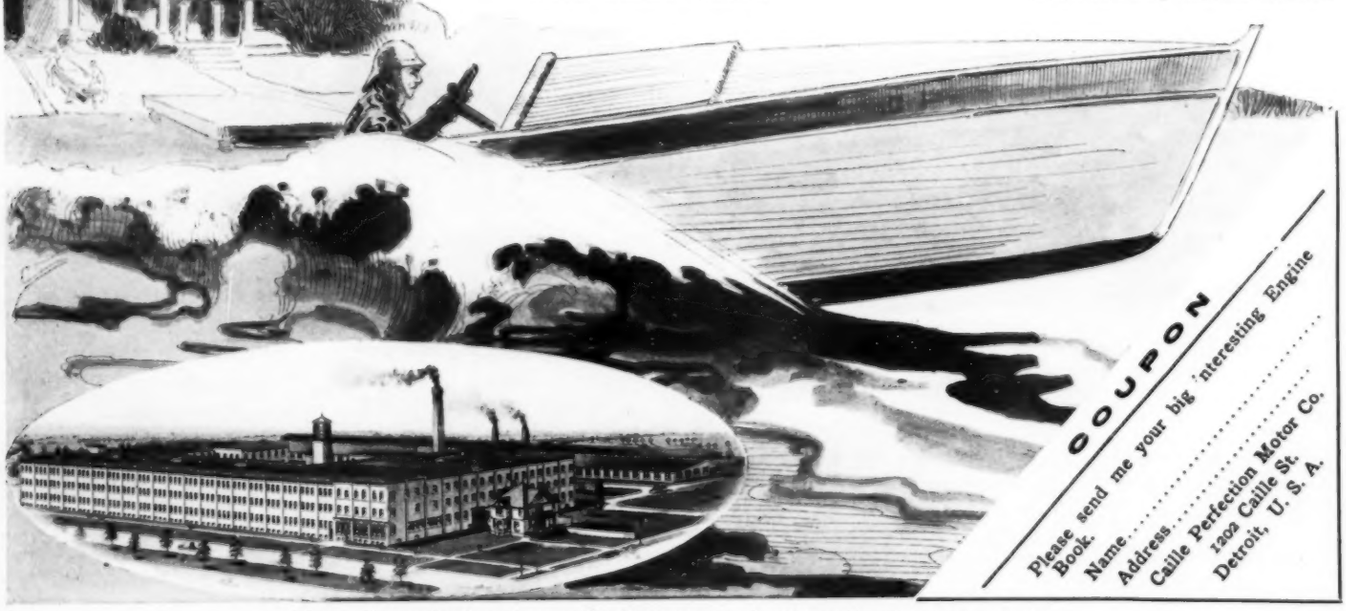
It can't get out of kilter.

It is so simple and so well made that it performs epually well in fresh, salt or tide waters, in calm or storm.

Installed in hundreds of tow-boats, fishing boats, oyster-boats and working boats of all kinds.

Caille Perfection Motor Co.

1202 Caille Street **DETROIT, MICHIGAN**

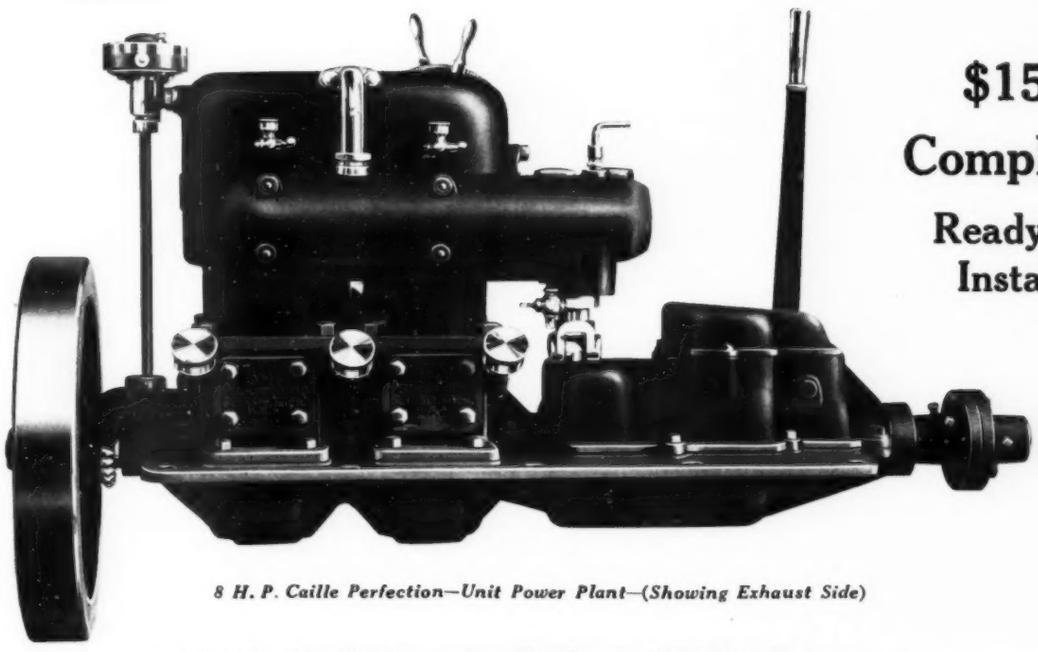


COUPON

Please send me your big interesting Engine Book.
Name .....
Address .....
Caille Perfection Motor Co.
1202 Caille St.
Detroit, U. S. A.

1913 CAILLE PERFECTION

A Triumph of Engineering Skill



$150 Complete Ready to Install

8 H. P. Caille Perfection—Unit Power Plant—(Showing Exhaust Side)

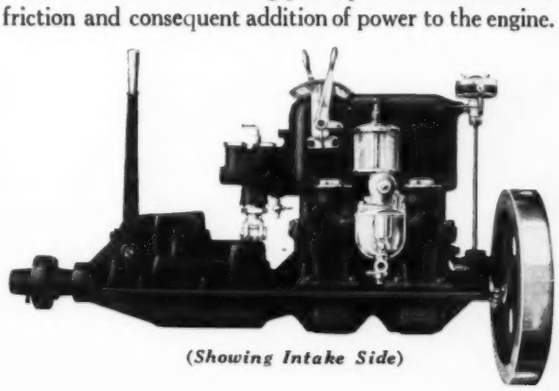
Here's the Realization of a Mechanical Ideal, the success of which guarantees an efficient motor boat, in that it permits the conservation of your motive power.

Power when and where you want it---real full rated horsepower harnessed into one complete, accurately balanced power unit---straight line drive transmission system and a drive shaft that is all twist, all energy, all leak-proof---That's the Caille Perfection Marine Engine for 1913 which has excited the wonder and admiration of the entire engineering profession.

Through an elaborate scheme of bearings and bushings in the Caille construction and shafting, we have increased the efficiency 50 per cent. and decreased all possible non-efficiency 50 per cent.---there is absolutely no power lost between the point where the power is made and the point where it is used. Our self-lubricating plan eliminates friction.

A complete analysis of our entire line of marine motors built for all purposes and ranging from 2 to 30 horsepower is given in the newest Caille Perfection Catalog---write for it.

The Caille has demonstrated to thousands of owners all over Europe and the United States, its right to the distinction of being the most carefully built double-efficiency engine ever put on the market. In operation and maintenance it is the most economical because of its standardization. The even, smooth and perfect fitting joints and bearings, and the minimum of wear on all working parts, proves the absence of friction and consequent addition of power to the engine.



(Showing Intake Side)

CAILLE PERFECTION MOTOR COMPANY, 1202 Caille Street DETROIT, MICH.

THE SCRIPPS COMPLETE MARINE POWER PLANT

RETROSPECTIVE

It is with some pride and no little pleasure that we recall the happenings of the past year and the part which Scripps motors have taken in the making of motor boat history.

In no one year have so many remarkable records been made, either individually or collectively, by any motors.

The Scripps Complete Marine Power Plant has thoroughly demonstrated its superiority by a number of remarkable performances, some of which are listed below:

It was a 16-horsepower two-cylinder Scripps which drove the 35-foot motor boat "Detroit" from Detroit to St. Petersburg, crossing the Atlantic Ocean from New York to Queenstown in 21 days and 16 hours.

It covered a distance of almost 7,000 miles without trouble or breakdown, encountering a dozen fierce ocean storms.

Crossing the Atlantic, the "Detroit" averaged six miles an hour, the motor turning over approximately 480 revolutions a minute.

In this remarkable trip from Detroit to St. Petersburg the motor made a total of 28,799,960 revolutions, and each piston traveled over 5,453 miles.

Such a motor performance stands unequalled in the history of motor boating.

It was also a 10-horsepower Scripps which conquered the terrible Niagara Rapids and Whirlpool.

Another Scripps won the single hull competition in New Zealand.

Still another Scripps beat the record of the famous Finnish Express Steamers across the Baltic Sea.

A 60-horsepower Scripps made a perfect score in the severe 1911 Great Lakes Reliability Contest.

Two 96-horsepower heavy-duty type Scripps motors made a perfect score in the 1912 Great Lakes Reliability Contest.

Another 6-cylinder Scripps recently won the Astoria-Portland, Oregon, 200-mile race, establishing a record of 6 hours and 33 minutes.

All of these exceptional feats have been performed by regular stock motors.

The Scripps you buy will give you the same service.

PROSPECTIVE

Naturally such activities, such proofs of reliability, have had their effect.

Our business has increased amazingly.

Our domestic trade exceeding by 85 per cent. that of the previous year and the export business exceeding all bounds and expectations.

Factory plans for enlargement and additional equipment are now under way.

Material has been ordered for a greatly increased production—three times as much, to be exact.

We intend to keep up with the demand, so let us have your specifications early.

Remember, we make one, two, four and six-cylinder motors in both regular and extra heavy duty types, 4 to 96 horsepower.

Scripps motors are carried in stock in New York by Bowler, Holmes & Hecker Co., 141 Liberty St., N. Y. C., and in Boston by Walter H. Moreton, 218 State St.

Scripps Motor Company

651 Lincoln Avenue
Detroit, Mich.

WHERE OTHERS FAIL

TRADE MARK

LUBROLEINE

"MAKES MOTORS MAKE GOOD"

LUBROLEINE OILS are noteworthy for their economy, on account of the extra mileage they give with less consumption of oil, together with the saving of wear on all moving parts.

They are made from best Pennsylvania Crude, acknowledged the world's finest lubricating raw material, and are absolutely pure, being manufactured by a process which insures a most thorough system of filtration to remove all carbon forming impurities and to preserve the utmost power-producing properties.

Motors will last longer, run easier and be freer from carbon in the cylinders if LUBROLEINE is used.

LUBROLEINE MOTOR OILS are made in different grades and weights for different types of air and water cooled motors and to meet the complex conditions under which the motors are operated.

They produce a continuous oil film of remarkable staying qualities which reduces friction to the lowest point. This film keeps moving parts from contact under any working temperature, no matter how small the clearance or heavy the pressure.

IMPROVED SEALED PACKAGE

ADOPTED FOR YOUR PROTECTION

LUBROLEINE FIBROUS GEAR CASE LUBRICANT (formerly known as Phoenixo) is unexcelled for differentials and transmissions. It is made in Fluid, Semi-fluid and Heavy densities, all of which have a low cold test and high melting points.

LUBROLEINE CUP GREASE (formerly known as Climax Synovia) is a solid lubricant of highest quality for all purposes where a cup grease or solidified oil is required. Water and steam proof. Especially prepared for axle bearings, differentials and compression cups.

LUBROLEINE GRAPHITE GREASE (formerly known as Centaur) is a perfect combination of finest American graphite and high grade lubricating grease. Impervious to water or steam. Not affected by heat or cold. Will not gum. Recommended for gears, bearings and chains. It will pay you to give LUBROLEINE a trial. These lubricants are sold in all the principal cities of the United States as well as most foreign countries. If your dealer does not carry a full stock of LUBROLEINE OILS and GREASES, do not accept "just-as-good" substitutes, but let us hear from you at once, giving make and type of your motor and we will see that you are promptly supplied.

SEND FOR NEW EDITION BOOKLET "THE MISSION OF LUBROLEINE"

DEALERS—We have a proposition for you. Write for particulars.

NEPTUNE LAUNCHING GREASE USED FOR SUPERDREADNOUGHT "NEW YORK"

NEPTUNE LAUNCHING GREASE was used on the ways for the launching of the superdreadnought battleship "NEW YORK," which was successfully launched at the Brooklyn Navy Yard October 30th. This Grease was also used in launching the battleships "TEXAS," "WYOMING," "ARKANSAS," etc. NEPTUNE LAUNCHING GREASE is the standard launching lubricant used and recommended by the leading shipbuilders in this country for large and small craft of every description. Write for sample and price.

Fiske Brothers Refining Company

Established 1870

Pittsburgh **New York** **Newark**

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FOUR CYCLE VALVES IN HEAD

FRISBIE MOTORS

ONE TO SIX CYLINDERS 3 TO 75 HORSE POWER

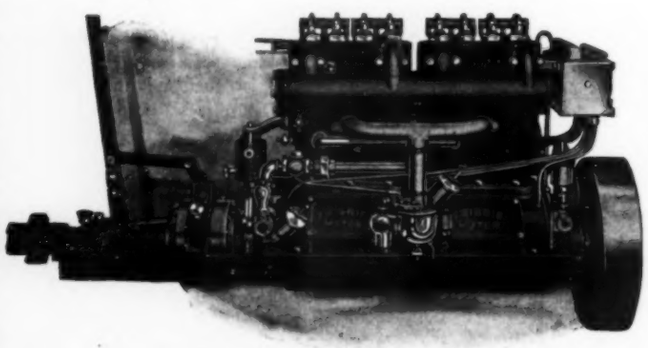
NONE BETTER FEW AS GOOD

Frisbie Motors have earned their present position in the front rank of high grade marine engines. We acknowledge that there is more than one good motor on the market, but we do not acknowledge that any are superior to the Frisbie.

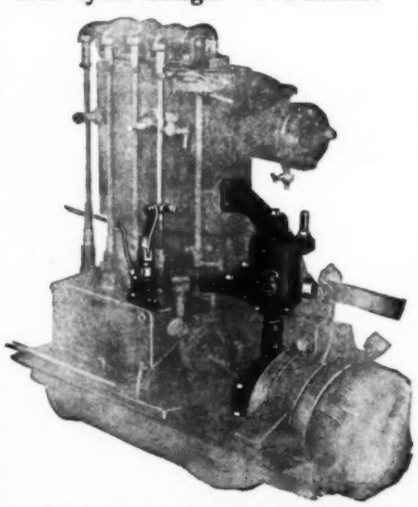
The predominant feature of Frisbie design is the placing of the valves in the cylinder head. For power, speed and economy this is conceded by all four cycle experts to be the most efficient construction known. The whole valve cage including both valve and seat is quickly removable for inspection, grinding or replacement.

If you are or will be in the market for a motor this year or next, we want you to study Frisbie construction. It is an example of the highest grade four cycle design. No matter what engine you select eventually, a thorough understanding of Frisbie principles will make you a better engine buyer. It will give you a standard by which you can judge all other makes. For high quality, great economy, absolute reliability and moderate cost the Frisbie Motor cannot be equalled.

Let us prove it.



Write today for catalog and name of nearest agent



This view shows two important Frisbie features, the Water Jacketed Air Compressor and the Return Oil Pump, both of which are furnished on 25 H.P. and larger Motors as regular equipment if specified. Air Compressor is driven by eccentric from main shaft and has relief cock to remove load when not required. The Return Oil Pump which is actuated by one of the push rods forces the used oil from the base through a filter and back to the mechanical oiler, effecting a great saving in lubrication expense.

THE FRISBIE MOTOR COMPANY

COLLEGE STREET MIDDLETOWN, CONN.

GOODS OF QUALITY

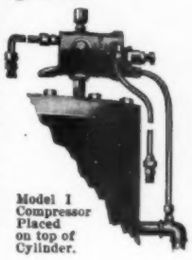
REASONABLE PRICES DUE TO QUANTITY

The Gray Water-Jacketed Burned Gas Compressor

Made for top or side of Cylinder.

An absolutely safe and automatic device for maintaining a steady pressure in tank for blowing whistle. Once attached to your engine, your expense and whistle troubles are ended.

Price, $5.00 up



Model 1 Compressor Placed on top of Cylinder.

Gray Fog Bell No. 1

No matter how rough the sea, will not ring until you pull the cord. May be instantly removed by loosening one nut.

Price, including deck plate, $3.00

The Gray Marine Muffler

The drums are made throughout of heavy gauge galvanized steel—locks seamed and riveted. The outer drum is double and heavily interlined with asbestos. The openings in drums are so arranged that there are no pockets and with the outlet in lower side of head, water, oil or soot will pass through freely. It is built for service and efficiency.

No. 8 7¼ x 8 inch....$3.00
No. 8-E 7¼ x 14 inch.... 3.50
No. 8-F 7¼ x 20 inch....$3.75
No. 8-G 7¼ x 26 inch.... 4.25
No. 8-H 7¼ x 32 inch.....$5.00

The Gray Autochime Whistle

For air, steam or burned gas pressure

There is no fitting on a boat as attractive and essential as a fine whistle, and there is no whistle compares with with the Gray Autochime in tone, efficiency and appearance.

No. 1—Senior, 2 x 15"....$5.00
No. 2—Yacht Special, 1½x15" 4.50
No. 3—Junior, 2 x 9".... 4.00
No. 4—Launch Special, 1½x8" 2.75
No. 5—Midget, 1¼ x 5".... 1.75

The Gray Whistle Valve

The Gray Valve is especially built for air and burned gas pressures which are difficult to hold and require good valves.

No. 1 Satin Finish $1.50
No. 1-A Satin Finish, with Deck Plate 1.75
No. 1-B Polished 1.75
No. 1-C Polished, with Deck Plate 2.10

The pump cylinder is 4 inches in diameter and 12 inches long, made of heavy gauge seamless brass tubing, highly polished. The washer is made of especially prepared leather, unusually thick and large. It is supported on each side by steel washers and will last for years.

This pump is strictly high grade throughout and made entirely different from the cheap pumps with which the market is flooded. It meets government requirements.

No. A-7. Fitted with single tone whistle $4.00
No. A-5. Fitted with Autochime Midget 5.00

The Gray Telescoping Flag Pole and Electric Aft Light

The most beautiful and practical accessory made for the modern motor boat. It overcomes the annoyance of the old fashioned and cumbersome lantern, which is always in the way and beats itself to pieces in a heavy sea.

The top is fitted with a Tungsten light, over which is placed a fluted globe to meet government regulations and of just the right size and shape to give style and finish. The wires pass down through the tubes—are invisible and protected from the weather. Ten feet of wiring and a connector are furnished with each outfit. Height extended, 7 feet.

The pole may be instantly and entirely removed by loosening the clamp and connector. It can be telescoped and stored in a very small space.

Price, Model 1, including deck plate, $8.00.

We make several models, also BOW POLES. Price $3.50 up.

Gray Spark and Throttle Controls

No. 2 Control, Horizontal.

No. 1 Control, Vertical.

No. 1—Vertical, complete excepting rods, $4.00

No. 1-A—Without adjustable bell cranks and bracket.....$3.00

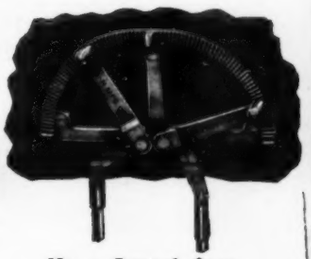
No. 1-C — Adjustable bell cranks and brackets $2.00

Brass rod, per foot, threaded and polished .....

No. 2 — Horizontal, complete excepting tube and rod ...$4.00

Tube, including rod, per foot .....

No. 3 Adjustable Control, $4.00



No. 4 Control, $3.00

Gray Gasolene Filter

3-way valve permits closing off gasolene draining filter, or filling cup for priming. Screens may be removed without disturbing piping.

Price, ¼ Pipe Size, $2.00

GRAY REVERSE CONTROL BUILT TO ORDER

Price, $10.00 and up

Complete Whistle Outfits

A complete whistle outfit consists of a compressor, whistle, whistle valve, tank, gauge, tubing and tube connectors. We furnish one two-foot and three ten-foot lengths of tubing with our complete outfits. The gauge is not absolutely necessary, as the compressor is automatic. We, however, advise using a gauge, as it shows the exact pressure at all times.

Price, $11.50 and up. Ask for Catalogue.

Write for Special Marine Catalogue No. 48. It describes our complete line of marine fittings. If interested in automobile accessories ask for Catalogue No. 49.

For Sale by

A. Baldwin & Co., Ltd., Camp and Commonwealth Sts. .....New Orleans, La.
Canadian Fairbanks-Morse Co., Ltd., Montreal, Que., Can.
Geo. B. Carpenter & Co. .....Chicago, Ill.
Walter Coleman & Sons..Providence, R. I.
Chas. D. Durkee & Co. ....New York City
Fairbanks, Morse & Co. ...New York City
Fairbanks, Morse & Co. .....Chicago, Ill.
John Forman .....Montreal, Que., Can.
Gasolene Engine Equipment Co., New York City
Gas Power & Supply Co. ...Portland, Ore.
C. W. Greene Co. .....Tampa, Fla.
Walter H. Moreton .....Boston, Mass.
Motor, Boat & Auto Supply Co., Cincinnati, O.
Morris, Russell & Co. ...London, England
Marine Equipment & Supply Co., Philadelphia, Pa.
Marine Engine & Supply Co., Los Angeles, Cal.
John Millen & Son, Ltd., Montreal, Que., Can.
Chas. E. Miller .....At All Branches
Motor, Boat & Supply Co. ...Cleveland, O.
Rober Machinery Co. .....Portland, Ore.
South Coast Marine Supply Co., San Diego, Cal.
Geo. W. Chase & Co.....Jacksonville, Fla.
Simpson, Lawrence & Co., Glasgow, Scotland
And Others

GRAY-HAWLEY MFG. CO., 939-941 Jefferson Ave., Detroit, Mich., U.S.A.

The Difference Between

SMACK'S HUMAN LIFE PRESERVER

Smack's Human Life Preserver

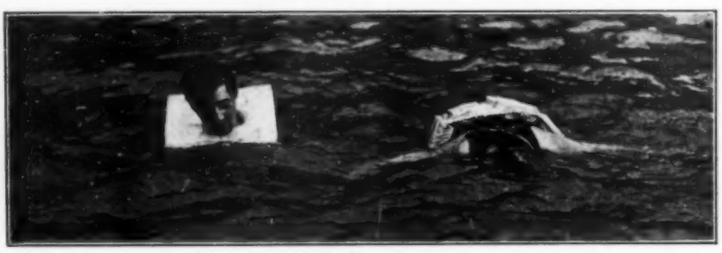
AND

Smack's Ideal Swimming and Rescue Buoy

SMACK'S IDEAL SWIMMING AND RESCUE BUOY

IS THAT ONE IS ROUND AND THE OTHER SQUARE

The difference between these and all preceding appliances is that Smack's appliances will positively do their work under all conditions.



A LIFE PRESERVER and a Life Preserver?

The above reproduction from an actual photograph shows two disinterested men testing Smack's Human Life Preserver and the common form of life jacket stamped with the approval of the U. S. Inspectors of Steam Vessels before the Long Branch City Board of Trade Committee. Ten seconds previous to snapping of photo both men were instructed to relax entirely as tho exhausted.

The camera is no more truthful than our claim that Smack's Human Life Preserver is not only the best but the only infallible Life Preserver in the world to-day. When the ship is sinking it is too late to think about equipping with a Life Preserver that will do its work.

Buoyancy Applied

around the waist, if not resisted, will surely lift one part or another of the waist line clear. The buoyancy of Smack's appliances is in the right place, and will always keep the head clear.

Dora Woolard, Professional Swimmer, wearing Smack's Ideal Swimming and Rescue Buoy.

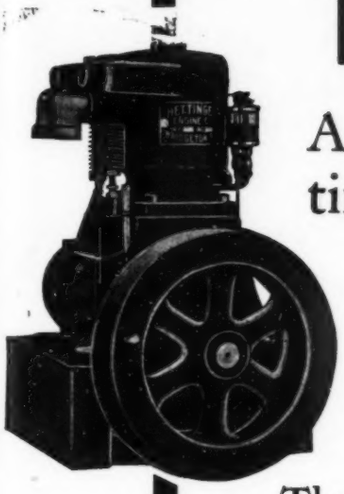
The Best Life Saving Appliances, Made of the Best Materials

PRICE (Either Form) $2.00 Each

HUMAN LIFE PRESERVER COMPANY

341 LIBERTY STREET LONG BRANCH, N. J.

Literature mailed on request.



Hettinger Engines

Ask the Fisherman why he uses a Hettinger Engine and recommends it---then you'll understand why it is

"the engine that runs in schools;"

why it is the best marine engine for all purposes---for pleasure or work.

The engine of a fishing boat must give satisfaction every work day of the year. You can depend on the **Hettinger** every day, under all conditions of weather and hard service. That's why we have sold to individual owners of working boats as many as fifteen **Hettinger Engines.** That's why we have no record of any man who has ever used the **Hettinger Engine** who afterward bought an engine of any other make.

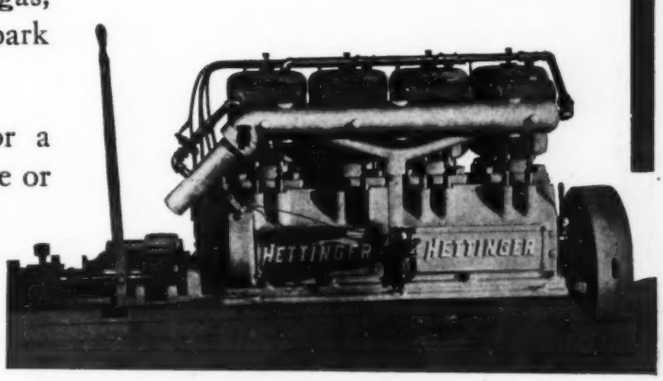
Mechanically Perfect

The Hettinger Engine is simple in construction — no small working parts to get out of order; is made of highest grade materials, with best grade workmanship.

Yet it is low in first cost and low in operating cost—keeps in first-class condition with minimum repair, and is economical in consumption of fuel. Every **Hettinger** is guaranteed to develop more than its rated horsepower.

At purchaser's option, all **Hettingers**—from 6-H. P. to 36-H. P.—are made to use distillate or producer gas; either make-and-break or jump spark ignition.

If you are in the market for a marine engine—for either pleasure or working purposes, investigate the efficiency of the **Hettinger Engine** before you buy. Send for our booklet "B" today.

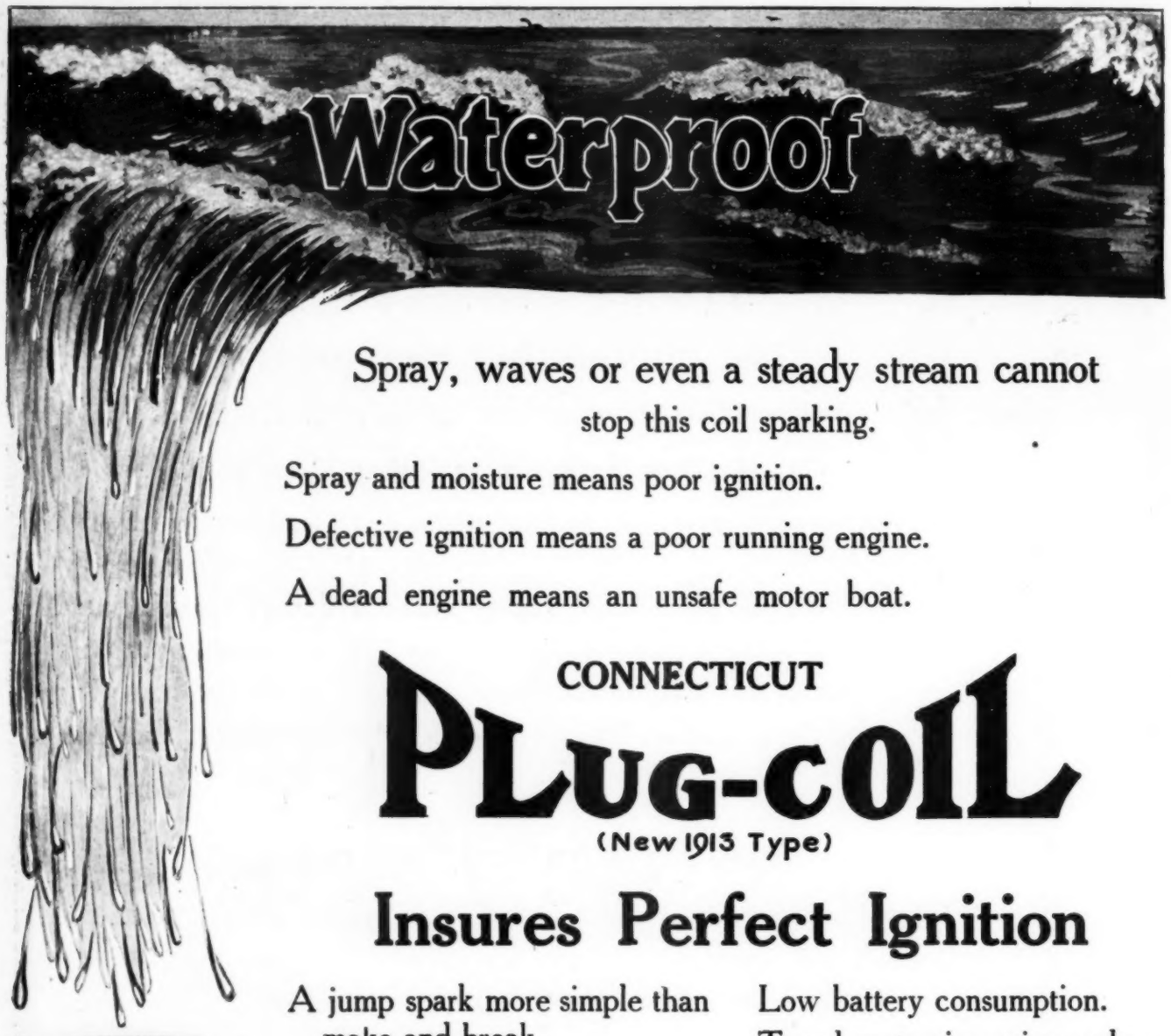


THE 36-H.P. 4-CYCLE HETTINGER ENGINE

Note the fact that **HETTINGER ENGINES** have large water pipes and pump; that no working parts are left exposed to catch the clothing; that all parts are easily accessible; that an absolutely complete outfit in every detail is furnished with every engine.

Hettinger Engine Co.

Bridgeton, New Jersey



Spray, waves or even a steady stream cannot stop this coil sparking.

Spray and moisture means poor ignition.

Defective ignition means a poor running engine.

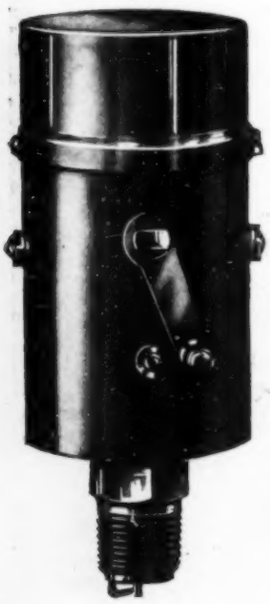
A dead engine means an unsafe motor boat.

CONNECTICUT

PLUG-COIL

(New 1913 Type)

Insures Perfect Ignition



A jump spark more simple than make and break.

No high-tension wires.

All the secondary current delivered direct to plug points.

No leakage possible.

Low battery consumption.

Two low tension wires only.

All parts of coil and plug readily accessible and interchangeable.

Vibrator housed under removable waterproof brass cover.

Waterproof **Shockproof** **Foolproof**

With Switch $5.50 Without Switch $5.00

Write today for Bulletin 37M

CONNECTICUT TEL. & ELECTRIC COMPANY, Inc.

Meriden, Conn., U. S. A.

BRANCHES

231 West 54th St., New York City
544 Van Ness Ave., San Francisco, Cal.
1463 Michigan Ave., Chicago, Ill.
1528-30 Broadway, Denver, Colo.
1414-16 Race St., Philadelphia, Pa.
224 Pleasant St., Boston, Mass.

Pacific Coast Representatives: Hughson & Merton, Los Angeles, Portland and Seattle.

When writing to advertisers please mention MOTOR BOATING, *the National Magazine of Motor Boating.*

WATCH THIS Space For Our 1913 Announcement On Eagle Engines

STANDARD CO.

TORRINGTON - - CONN.

EMERSON 1913 MODEL NOW READY

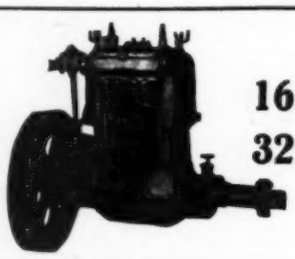
50 MILES PER HOUR GUARANTEED

A 200 H.P. 20 FOOTER NOW READY FOR IMMEDIATE DELIVERY

WE WILL SHOW A SPEED OVER THE GOVERNMENT'S OFFICIAL COURSE, AT WASHINGTON OF FIFTY MILES AN HOUR OR OVER OR NO SALE. LATEST TYPE EMERSON MOTORS. PRICE RIGHT.

The unequalled performances of such boats as Emerson, Sand Burr II, Lolande, Cuyote, Tiny Tad, Pee-Vee-Ho, Al-Par-Nel, Fawn II, Leading Lady, Eel, Potlach Bug, Squaw, Emerson Jr. and 100 others in winning many of the important events of the country, necessitated our building the greatest engine shop in the U. S., to enable us to take care of our business. Our 1913 models are now ready for immediate delivery, and to substantiate their supremacy we invite competition regardless of power.

For speed write for Catalogue S



16 to 20 H. P. $250
32 to 40 H. P. $500
(Catalogue B)

THE EMERSON ENGINE COMPANY
ALEXANDRIA, VA.

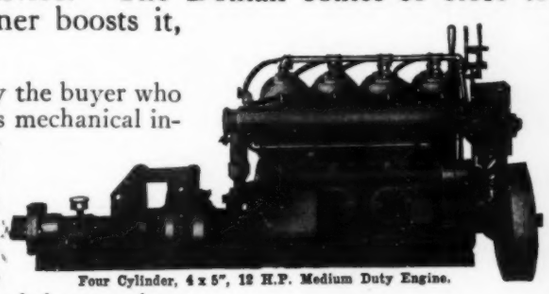
The DOMAN MARINE MOTOR

MOTOR BOATING

Good Enough for Anybody, Expert or Novice

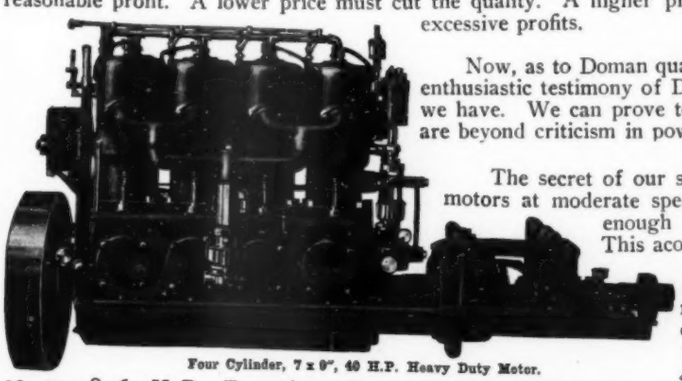
THE DOMAN is a motor that is good enough for anybody, fisherman, ferryman, motor boatman, racer or yachtsman. Nobody can ask or expect more than 100% value and 100% satisfaction in service. The Doman comes so close to 100% efficiency all the time that every owner boosts it, every time he gets a chance.

Doman Motors are of the four cycle type. Only the buyer who is looking for something to tinker with—to lavish his mechanical ingenuity on—will pass up Doman quality. The other kind of buyers, fellows with experience and good judgment, take one look at the features of Doman construction and one look at the record of Doman performances. That is usually enough to convince them. We are ready to match any maker on these two points. Seventeen years of experience are back of these engines.



Four Cylinder, 4 x 5", 12 H.P. Medium Duty Engine.

The Doman isn't a high-priced motor. In fact, it is extremely reasonable if you compute by working value instead of by weight or power rating. The price is based on the cost of the best workmanship and materials, plus a reasonable profit. A lower price must cut the quality. A higher price means wasteful manufacturing methods or excessive profits.



Four Cylinder, 7 x 9", 40 H.P. Heavy Duty Motor.

Now, as to Doman quality. We have a slogan "Ask an Owner." The enthusiastic testimony of Doman users is the most valuable sales argument we have. We can prove to your absolute satisfaction that Doman motors are beyond criticism in power, reliability, durability and economy.

The secret of our success is probably the fact that we rate all our motors at moderate speed. Then the owner is always sure of power enough to do his work without straining the engine. This acounts for the long life and freedom from trouble.

Doman Motors are made in a number of models—the right motor for every boat, pleasure or commercial. Medium Duty type, 6, 9, 10, 12, 15, 20 and 30 H. P. High Speed type, 25-35, 45-50, 55-75 H. P. Heavy Duty type, 16, 24, 30, 32, 40, 48, 60 H. P. Two, three, four and six cylinders: Paragon Reverse Gear mounted on extension of base.

You don't buy a motor every day, but when you do, you want the one best motor on the market. Before you buy any motor, investigate the Doman carefully. Write today for our latest catalog.

THE H. C. DOMAN COMPANY, Dept. C., OSHKOSH, WIS.

G. H. SCANLON, 137 Liberty Street, New York City

S. V. B. MILLER, Seattle, Wash.

DO NOT PAY

more than $35.00 for a 1 1-2 horse power two cycle motor, or more than $65.00 for a 3 1-2 horse power two cycle motor, and both should be fully equipped at these prices.

Is there any reason in the world why you should add many pounds of *unsightly* and *unnecessary cast iron* to your boat and *pay for it at the rate of $1.00 per pound?*

A 1 1-2 horse power motor weighing 37 pounds develops the same horse power that a 1 1-2 horse power motor does that weighs 125 pounds. What we want to make plain to you is that *cast iron does not constitute horse power.*

Here are a few real good reasons why you should become one of the many satisfied owners of a Gilmore motor.

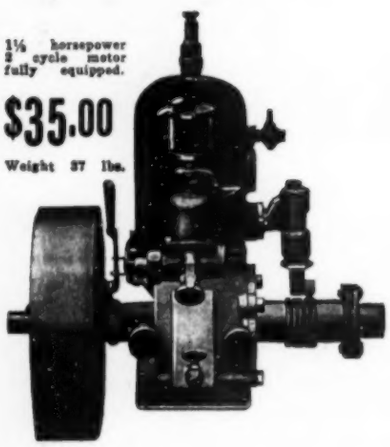
Because we can *save you* considerable *money* on the purchase price of your motor.

Because Gilmore motors *add to* the *carrying capacity* of your boat.

Because all the essential things that go to make up motors of the *highest grade are* embodied in *Gilmore motors.*

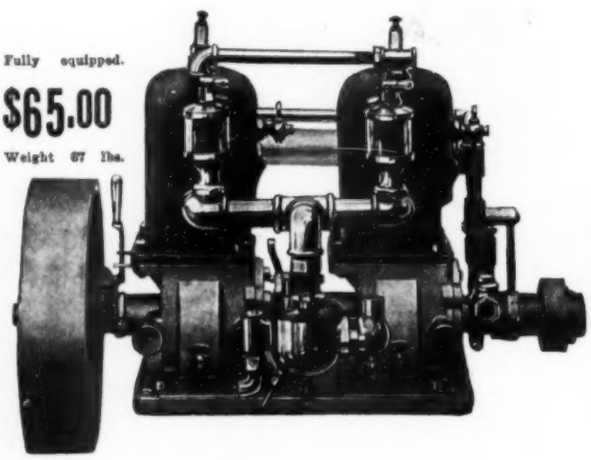
Because we guarantee all of our motors for one year and *we do live up to this guarantee.*

We know we have the motor you want and assure you that you will never be dissatisfied should *you decide on a Gilmore.*



We allow purchasers of Gilmore motors to use our motors for 30 days and if they are not all we claim they can be returned and the money will be returned

This little 1 1-2 h. p. motor is a marvel of simplicity, starts, stops, reverses, runs equally as well in either direction at high, medium or low speed, all controlled by one lever. Designed for Dinghys, fishing boats, row boats and canoes.



This 3 1-2 h. p. motor is giving great satisfaction installed in launches, tenders and fishermen's boats. It gives 14 real miles per hour installed in 18 foot speed boats.

We build two cycle auto marine motors, 1 to 4 cylinders, 1 1-2 horse power to 8 horse power from $35.00 to $125.00.

Four cycle motors, 1 to 8 cylinder, 5 to 50 horse power, from $110.00 to $850.00.

Write today for Catalogue

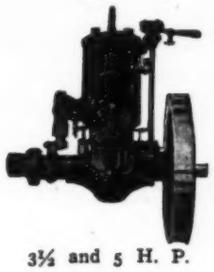
GILMORE MOTOR MFG. CO.

354 GREEN AVENUE DETROIT, MICH.

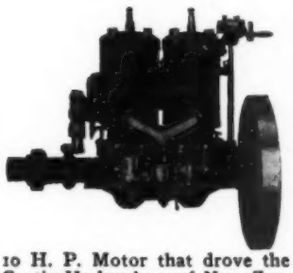
Erd LINE OF QUALITY

The Most Perfectly Designed Two Cycles in the World

Standard Type
Two Cycle



3½ and 5 H. P.



10 H. P. Motor that drove the Curtis Hydroplane of New Zealand 20 miles per hr.

Manufactured for 16 Years

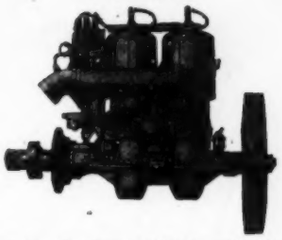
With but one aim---to turn out nothing but the best.

During those 16 years they have proven to thousands THEIR EXCESS HORSE POWER DEVELOPMENT, THEIR ABSOLUTE DEPENDABILITY.

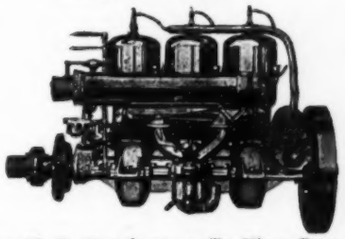
Don't buy from a company without a reputation.

It's ACTUAL RESULTS that COUNT.

Featherweight Type
Two Cycle



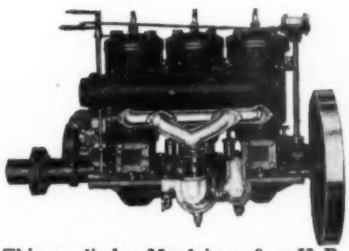
18 H. P. Two Cylinder suitable for Yacht Tenders and Fast Family Runabouts.



30 H. P. that drove 20 Ft. Viper Boat 28 miles per hr., and 17 Ft. Hacker Hydroplane 30 miles per hr.

Note Erd Results

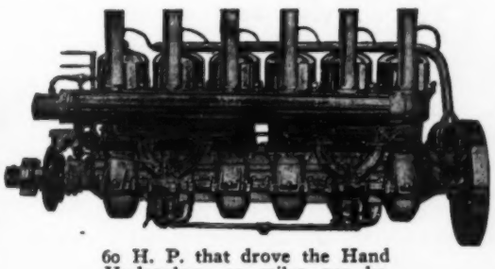
An **ERD** Motor represents an **INVESTMENT --- NOT A SPECULATION.**



This 3 cylinder, Manf. in 12 & 15 H. P. 12 H. P. drove Hacker Hydroplane 22 miles per hr. 15 H. P. drove Viper Type 30 miles per hr.

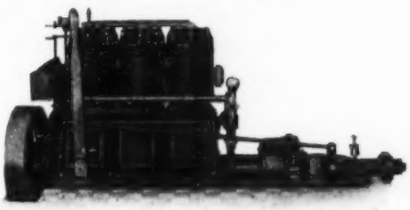
An EXAMPLE of POWER.

17 Ft. Hacker Hydroplane, speed 22 miles per hr., with 12 H. P. Erd.



60 H. P. that drove the Hand Hydroplane 32 miles per hr.

INVESTIGATE THE ERD LINE BEFORE BUYING



1913 Catalogue and Prices Now Ready

MEDIUM DUTY FOUR CYCLE. Suitable for Cruisers, Fish tugs, commercial boats of all kinds.

Erd Quality

Erd Motor Co.
Saginaw, Mich., U. S. A.

Erd Quality

THEODORE D. WELLS

"William A. Jamison"

"VIKING"

"KARINA"

Naval Architect

When YOU Build a Boat I Want an Opportunity To Figure With You.

DON'T place contracts for any boat—don't decide finally on what you want, until you have given me an opportunity to talk with you about it. It is true you don't owe me an interview, but I am sure you want maximum efficiency and satisfaction for the money you invest. For this reason you owe it to yourself to take every precaution toward insuring that efficiency and satisfaction.

Without exceeding the truth I believe I can state that my experience in designing and supervising the construction of motor boats, steam and sailing yachts, auxiliaries and commercial craft is not exceeded by any living naval architect. This statement I expect you to prove to your own satisfaction, when you investigate my standing and success. My past work is the best proof of my ability to serve you satisfactorily. As my services are of a professional nature, investigation will convince you more than argument.

The "William A. Jamison" shown above is considered the best carfloat towboat in New York Harbor. "Viking" is a distinctive 180 foot steam yacht which has attracted favorable comment wherever seen. "Karina" is the largest sailing yacht in the world (202 foot).

Let me show you what I have built along the lines of the boat you have in mind.

Theodore D. Wells, Naval Architect

32 Broadway, New York City

Telephone 6737 Broad

MOTOR BOATING

CROCKETT'S VARNISHES

For nearly forty-five years these products have been made specially for marine use. Although widely imitated, no substitute has ever been successful in securing the durability combined with superior finish found in the CROCKETT VARNISHES.

In the construction of motor boats and yachts the important matters considered are design, stability, speed and finish. To obtain the best results on exterior and interior finishing it is necessary to use the best varnish. Ordinarily good varnish is not good enough. It requires a varnish made especially to withstand the extreme conditions of wear and atmosphere.

SPAR COMPOSITION

The best known and most durable marine varnish in the world. Positively salt and fresh waterproof, it has no equal for exterior marine use or outdoor work of any kind. The deep brilliant lustre is not affected by the severest exposure. It will not spot, crack, blister or scale and cannot turn white.

No. 1 PRESERVATIVE

The best interior finish that brains and experience can produce for use on steamships, yachts and motor boats. Less liable to mar or scratch than any finish known. Is not affected by the use of hot water and soap. Can be rubbed and polished, or left with an egg-shell gloss.

WATERPROOF FLOOR FINISH

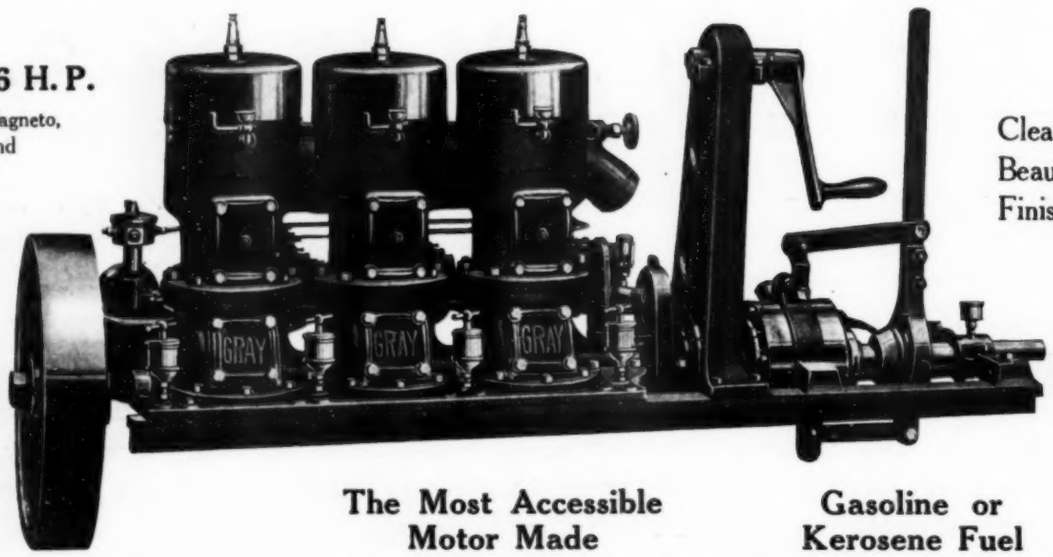
The only reliable finish to use on the floors of yachts and motor boats. Heel marks do not show white on it. Can be washed with hot water and soap, the only way to keep a floor clean.

THE DAVID B. CROCKETT CO.

Bridgeport Conn.

We Have a Special Introductory Inducement to Offer. Good for One Only of These 1913—36 H. P. Model "T" Gray Motors in Every Boating Center Before January 15th, 1913

GRAY 36 H. P.
With Bosch Magneto,
Rear Starter and
Paragon Clutch



Clean—Quiet
Beautifully
Finished

The Motor That Requires No Attention

except occasionally screwing down a dope cup.

No lubricators to watch—can't go wrong—lubricates through gasoline. Equipment of such high grade and excellent quality that it don't get out of order.

Cylinder and piston machined so accurately that motor starts on switch practically every time.

A combination two and three-port motor. Can be operated as a two-port, a three-port or a combination of the two.

This combination gives you three motors in one—a mighty important feature. Ask about it.

The Most Accessible Motor Made

A broad claim, but we back it up with ***facts.***

A cylinder can be removed and re-assembled in less than twenty minutes. A connecting rod instantly accessible. No exposed water piping to connect and disconnect.

Every part "get-at-able."

Big—Long Life—***interchangeable*** bearings—(let us tell you about its features).

A lifetime of experience behind it.

Absolute Guarantee

An absolute guarantee covering power, workmanship and material—and a big, well-established, responsible firm is ***behind every motor.***

You take no chances with the Gray.

Gasoline or Kerosene Fuel

Regular Equipment Gasoline. However the motor is ***designed*** to receive our patented Gray Kerosene Injector System, which can be added to the motor in half an hour at any future time at very few dollars expense.

Buy a motor that can be converted to a Kerosene Motor later if you want to do so.

Special Advance Information

Every man who needs a large motor for next year's yacht, cruiser or work boat, should write today for ***special literature*** on the 36 H. P.—1913 Model "T."

3 H. P. guaranteed to develop 4 H.P. Complete outfit **$55**

6 H. P., guaranteed to develop 7 H. P. Complete outfit **$89.50**

12 H. P. A powerful two cylinder motor that will develop 13 to 16 H. P. Price for complete outfit . . **$188**

MODEL "T"
Kerosene or Gasoline
Made in 1, 2 and 3 cylinders, 7 to 36 H. P. Price with complete outfit. **$115** and up

For Either Pleasure or Work Boats—Write for Details Today

GRAY MOTOR COMPANY

1274 Gray Motor Building, Detroit, Mich.

Neither Blisters Nor Cracks

It has *lasting qualities* unapproached by other varnishes. The heat of summer will not blister it—the coldness of winter will not make it crack—nor does the action of the rain and sun affect it.

Monarch Spar Varnish is the Varnish of Durability

When applied to your craft it means *service and economy*, and it means the commanding of *greater respect*. Therefore, *USE MONARCH SPAR VARNISH.*

CHAS. H. GILLESPIE & SONS, JERSEY CITY NEW JERSEY
ESTABLISHED 1824

RUNS LIKE A CLOCK
STRONG AS AN OX

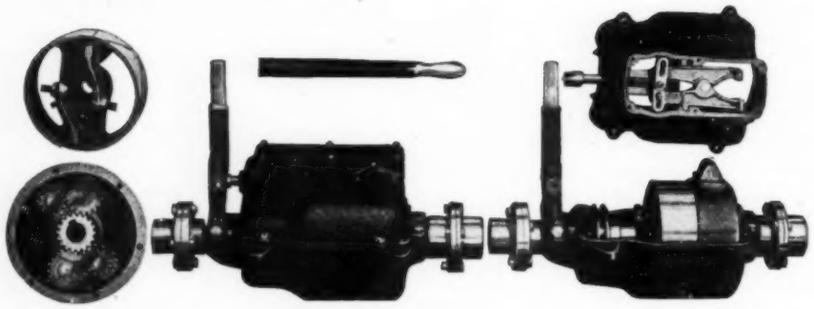
MODEL G

ENCLOSED MULTIPLE DISC

MODEL H

OPEN MULTIPLE DISC

MODEL I & J



ENCLOSED AND OPEN EXPANSION RING

Announcement

For years we have made and sold the leading Reverse Gear, but believing big improvements could be made we have this year gone through vast experimenting and testing, and have redesigned our Reverse Gears completely, making many improvements, and we believe to-day we have a Reverse Gear far superior to any and all on the market, and are several years in advance, as we have a Multiple Disc Gear containing from 12 to 24 discs, suitable for all classes of boats from the working type to the high speed racer; they are light, powerful and compact.

We will also continue to manufacture our expansion ring type, with many improvements, which has been the leading Gear on the market for years. We are making a special effort for 1913 to procure your business on Reverse Gears, which are sold under a guarantee, and are built like a watch, and will give entire satisfaction in every way and shape. There is none better than the Famous Michigan Reverse Gear to-day.

Send for 1913 catalog, which covers many and many new articles for motor boats, never before built.

Catalog free. Send post card or letter stating requirements. All questions answered, full information given gratis.

MICHIGAN WHEEL CO.

1115 Monroe Avenue, Grand Rapids, Mich., U. S. A.

USL

USL TRADE MARK
THE UNITED STATES LIGHT AND HEATING CO.
(FORMERLY NATIONAL)

Storage Battery

Motor-Boat Owners Are Rapidly Learning

that storage battery ignition means a more powerful and smoother, sweeter running engine, and that storage battery electric light is a very practicable proposition.

Every season more motor boats take the water equipped with **U-S-L Ignition and Lighting Batteries** than the season before. Next season thousands of these Batteries will be in use.

Make that storage battery you are contemplating for your boat a **U-S-L.** We furnish them in every size and they cannot be equalled for ruggedness, reliability and efficiency.

Engine Ignition—Electric Lighting

A cold, feeble ignition spark will not do.

The **U-S-L Battery** delivers the kind that counts—quick, intensely hot flashes that cause instantaneous and powerful explosions. The results are greater speed, more mileage per gallon of gasoline, and greatly increased confidence in in your engine.

The same battery will supply current for electric lights as well as for ignition. No other light is so convenient, brilliant, safe, or flexible and electric light costs less if you use a **U-S-L.**

No complications—no delicately balanced parts—nothing to get out of order about this **Battery.** There are but few parts and every part is extremely simple, and rugged.

Dampness does not impair its effectiveness in the slightest degree.

The installation is a simple matter. Anyone can make the proper wiring connections. The battery may be placed wherever it will rest securely.

Frequent charging is unnecessary due to the exceptionally high sustained discharge capacity of the **U-S-L.** Only a small amount of current is required for recharging and the cost is slight.

The above illustration shows the rugged construction, compactness and highly finished appearance of a **U-S-L Ignition and Lighting Battery.**

The wooden case is of highly finished oak, dovetailed at the joints, and treated with several coats of protective paint.

The individual cells are completely sealed inside the oak case with a special sealing compound. This construction absolutely prevents acid leakage and acts as a cushion to prevent cell breakage.

All intercell connectors are welded making perfect electrical connections.

The terminal posts are fitted with strong, lead-protected brass bolt-connectors that make connecting and disconnecting extremely easy.

Our Bulletin on **U-S-L Ignition and Lighting Batteries** contains further information that will interest you. Write for one today.

The U.S. Light & Heating Co. *General Offices*: 30 Church St., New York. *Factory*: Niagara Falls, N. Y.

Branch Offices and Service Stations:

Chicago New York Boston Cleveland Buffalo San Francisco Detroit St. Louis

Manufacturers also of U-S-L Electric Starter and Lighter

USL

The Fastest Growing Publication in the Marine Trade

The first complete figures on 1912 advertising show that MoToR BoatinG continues to be "the fastest growing publication in the marine trade." The gain for the year is 66,150 agate lines. Nearly 16% more individual advertisers used MoToR BoatinG than in any previous year.

MoToR BoatinG has the largest guaranteed reader-reaching circulation in the marine field. It thoroughly covers the trade, manufacturers, dealers and thousands of boat owners. We guarantee in excess of 25,000 copies per issue and will make *pro rata rebate* in advertising rates for any issue that falls below that figure.

It is a result-producing circulation as proven by the growth in advertising volume which in turn is based upon the results manufacturers receive from their advertisements. MoToR BoatinG's readers are the kind who have the money to buy what they want. Make them *want* your product and they will buy it.

The Economy of a Monthly Journal

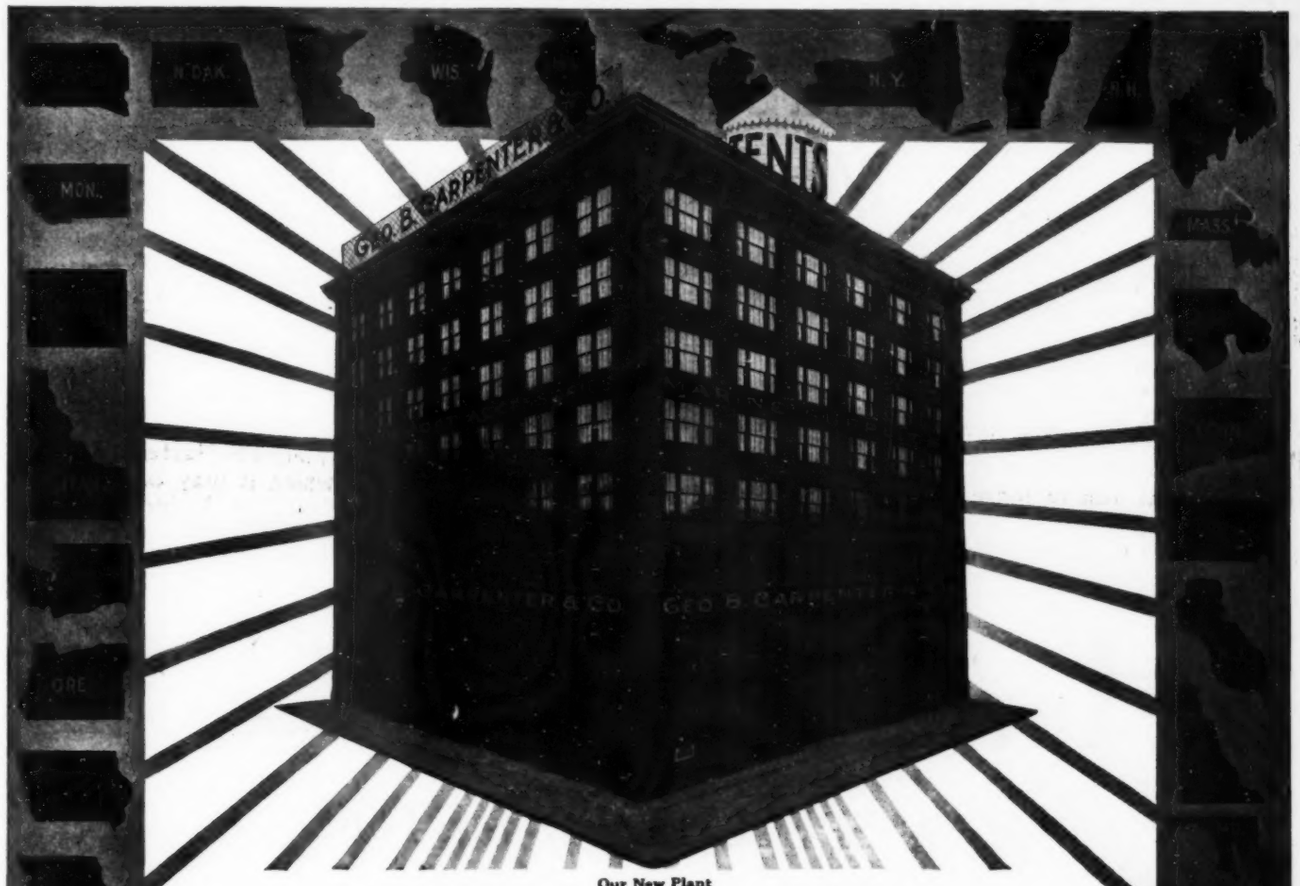
MoToR BoatinG gives a full year's advertising in twelve insertions. Your advertisement in each issue lives a full thirty days. The economy of a monthly over publications of more frequent issues is beyond question. Besides accomplishing the full quota with half as many issues, each number of MoToR BoatinG serves as a buying guide. Readers preserve it several months for reference purposes.

January MoToR BoatinG covers the Southern trade at buying season and is also valuable for advance publicity before the big shows of the season.

J. S. Hildreth
Adv. Mgr.

MoToR BoatinG

381 Fourth Ave.
New York City



Our New Plant

QUICK DELIVERY

is a sure result

Central Location, Complete Stocks Thorough Organization and a Modern Plant

This is the combination that enables us to reach promptly more boating centers than any other American house. We can save you hours—days—and sometimes weeks of annoying and expensive delay.

Send 20 Cents to Cover Postage on Our

MARINE SUPPLY CATALOG

No. 101. 550 Pages.

Full of interesting information and attractive prices

If you already have this catalog, send for our new 1913 Price List ready soon, mailed free on request

GEO·B·CARPENTER & CO.

430-440 Wells Street, Chicago "The Great Central Market"

Unquestionably America's Finest Marine Engine

UPON this and the opposite page appears an announcement which is of the greatest importance to all who are interested in motor boating and motor boat engines. The advent of Harbeck Motors marks a distinct advance in the construction of internal combustion marine engines. For the first time in history have been applied to a marine motor of the size and type of the Harbeck, the great modern business principles of standardization of product and specialization upon a single type.

We want you to read the important announcement upon these two pages.

We want you to consider this a personal invitation to investigate the merits of Harbeck Motors. We want you to judge for yourself whether we have produced a motor of which it may be said it is "Unquestionably America's Finest Marine Engine." We are willing that you should be the judge.

We are willing to abide by your decision.

HARBECK

A SPECIALIZED MOTOR

This is the day and age of specialization. Brains and machinery, equipment and plant, devoted to the manufacture of one type of merchandise will invariably result in a better product than can be turned out if the same forces are employed in the manufacture of a varied line. This is the fundamental principle upon which the Harbeck Motors Company is founded.

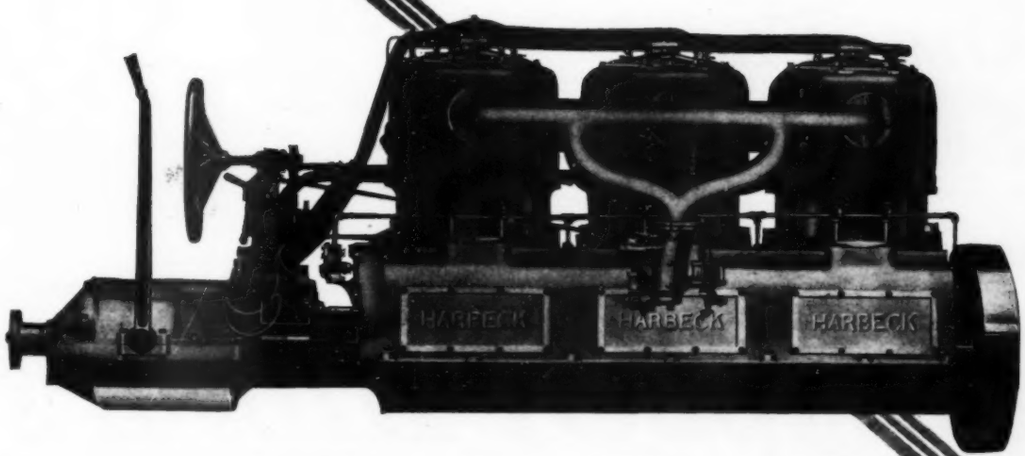
Before engaging in the manufacture of marine motors, the builders of Harbeck Motors were users of marine engines of many sizes and design. They have had the opportunity to study closely marine motor construction from the **viewpoint of the user** no less than that of the engineer.

Included in the Company's organization are engineers who have had extensive experience in the designing and construction of the highest type and best known automobile motors, extended experience in the active Engineering Department of the United States Naval Service and the widest possible experience in the use and operation of all types of internal combustion motors for marine purposes.

Harbeck Motors are produced in a plant ideally equipped with the most modern machinery for such work. In the selection of materials, markets have been scanned with the greatest care and nothing has been considered good enough for a Harbeck Motor for which an excuse need be offered.

We firmly believe that every part entering into the construction of Harbeck Motors is made from the best material it is possible to purchase for the manufacture of such part. The company's operatives are men whose training and experience peculiarly fit them for the work in hand, and no other can secure employment in the Harbeck factories. In designing these motors, the question of cost and final selling price was not considered. The first goal was the achievement of **the best engine.** We did not build to a price, but to the complete satisfaction of the user, in every detail and at all times. Thus was produced an engine which was rigid, light, powerful, simple, noiseless, compact, and above all, possessed of day-in-and-day-out reliability.

No man who contemplates the purchase of a medium or heavy duty motor now or in the future can afford to consider any motor until he has made himself thoroughly familiar with the details of this newer and better motor—the last word in marine motor construction.



MOTORS

The Harbeck Motor is a medium-weight, four-cycle engine, designed for medium and heavy duty. There are two models, one of six cylinders and one of four, both having 7½-inch bore and 8½-inch stroke. Horsepowers ranging from 40 to 150 are available, depending upon the service for which the engines are required, the varying capacity being governed by factors of rotation, speed, etc. The engines are designed for a multiplicity of uses, including high powered, part-open boats, cruisers, yachts, commercial and work boats, fishing craft and ferries.

Firm in the belief that dead weight of metal is not necessary for strength, the designers have made the engine as light as rigidity and durability would permit, with the idea of enabling the purchaser to put the extra displacement into stout hull construction.

The endeavors of the designers have been to produce:

An engine of symmetrical and well-balanced design, having a distribution of materials such as to give proper strength and rigidity at the point of greatest strain and to eliminate the surplus use of metal at points where strains are not localized. Result, a motor which is lighter per H.P. than any competing engine capable of delivering its full torque for an equally sustained period.

An engine that is clean in appearance and free from external pipes, rods and accessory connections so universally found on other engines.

An engine designed with all its accessories, magneto, pumps, starting devices, controls, etc., placed in a pleasing, compact, accessible group.

An engine which runs clean, free from spurting oil, and yet having all the accessibility of an open-base motor.

An engine in which every bearing may be separately adjusted or replaced without tearing down the engine, or removing it from the boat.

An engine which, because of the refinement and lack of ponderousness in design may be installed in the most cramped locations and yet afford a great relative accessibility.

An engine having a system of carburetion and manifolding which permits of the greatest flexibility in operation.

An engine which will develop more H.P. than other engines of the same bore and stroke, an accomplishment made possible by the most scientific combination of the factors of compression, carburetion and ignition.

An engine wherein the frictional surfaces are so worked out in regard to areas, and selection of materials, as to make the motor practically wear-proof, resulting in an ability to give long-continued, heavy-duty service.

An engine wherein the reciprocating parts are balanced to a nicety and wherein the relation of all moving parts has been so adjusted as to give the smoothest operation. Vibration and noise are largely eliminated—a **quiet** engine.

An engine having a lubrication system which is trouble free, the only motor having a lubrication system supplied from a large reservoir of cool oil fed infallibly to every working part.

An engine which starts practically without effort. This description applies to either the manual or air starting devices, both of which are provided.

An engine embodying in its transmission member the Hytork Clutch, the most efficient and easily handled marine reverse mechanism yet devised.

An engine which by the combination of merits here recited, gives assurance of the most continued high duty service for the capacity at which it is sold.

Finally—an engine of unfailing service. This is the Harbeck Motor.

Back of every claim is a fact upon which it rests. We shall be glad to give you full detailed information concerning either the four cylinder or the six. We promise you a real revelation in what a marine motor can be. Write today for full particulars.

SPECIFICATIONS:

SIX CYLINDER ENGINE

Bore—7½ Inches.
Stroke—8½ Inches.

350 R.P.M.— 75 Horse Power.
500 R.P.M.—108 Horse Power.
650 R.P.M.—130 Horse Power.

Weight complete with reverse gear—
With aluminum base....2650 Pounds
With semi-steel base....3000 Pounds

Price with aluminum base—$3700 f.o.b. Chicago.
Price with semi-steel base—$3500 f.o.b. Chicago.

FOUR CYLINDER ENGINE

Bore—7½ Inches.
Stroke—8½ Inches.

350 R.P.M.—50 Horse Power.
500 R.P.M.—72 Horse Power.
650 R.P.M.—90 Horse Power.

Weight complete with reverse gear—
With aluminum base....2000 Pounds
With semi-steel base....2300 Pounds

Price with aluminum base.....$2500
Price with semi-steel base.....$2350

Ignition—Latest type Bosch dual two-point magneto, with jump spark.

Lubrication—Pressure circulating system exclusive with Harbeck Motors.

Hytork Reverse Gear—Superior to any other type of clutch and reverse gear—cannot slip—no wearing parts.

HARBECK MOTORS COMPANY

C Street **CHICAGO, ILL.**

For The Finest Boat Built Use The Finest Motor Built

Campbell Motors

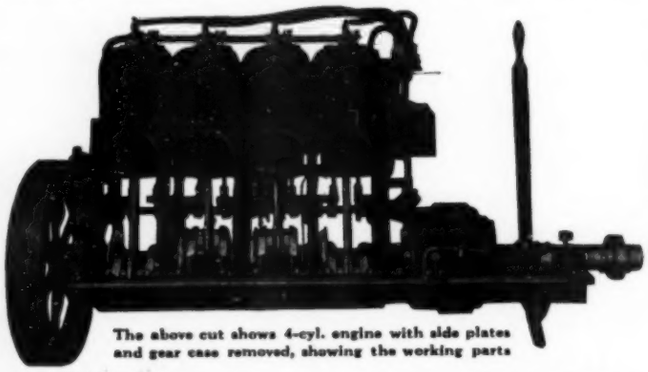
CAMPBELL MOTORS appeal to the man who is looking for the highest degree of perfection in present day marine motor construction. If you consider your boat worthy of the best power equipment made, and appreciate the economy of quality, we have the engine you want.

To get real value in any article you have to pay the price of quality. The Campbell does not compete with low priced motors but nevertheless it offers the greatest service value you can buy, dollar for dollar.

All Campbell Motors are of the four cycle type. We were the first manufacturers to recognize the necessity of building four cycle motors exclusively. The qualities on which the Campbell success has been built are power, speed, reliability, quietness, economy and durability.

The feature of accessibility reaches its highest development in our open base construction. The entire motor can be taken down without disturbing the cylinders or bed. The open base gives maximum strength with the minimum of weight.

The cast steel frames on which the cylinders rest are made with crankshaft and crankshaft boxes integral so that alignment of bearings must be perfect at all times. Large bearing surfaces and special provisions for easy adjustment of all parts to take up wear mean low repair bills and little time wasted. Reversing gear is built on same base with motor.



The above cut shows 4-cyl. engine with side plates and gear case removed, showing the working parts

Campbell Motors are made in one, two, three, four and six cylinders, from five to one hundred horsepower. They are especially adapted for high speed pleasure and commercial boats.

If you want a really good motor "Buy a Campbell and Keep Going"
Write today for catalog

CAMPBELL MOTOR CO., 706 LAKE STREET WAYZATA, MINN.

DISTRIBUTORS

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MOTOR BOATING

TUTTLE MOTORS

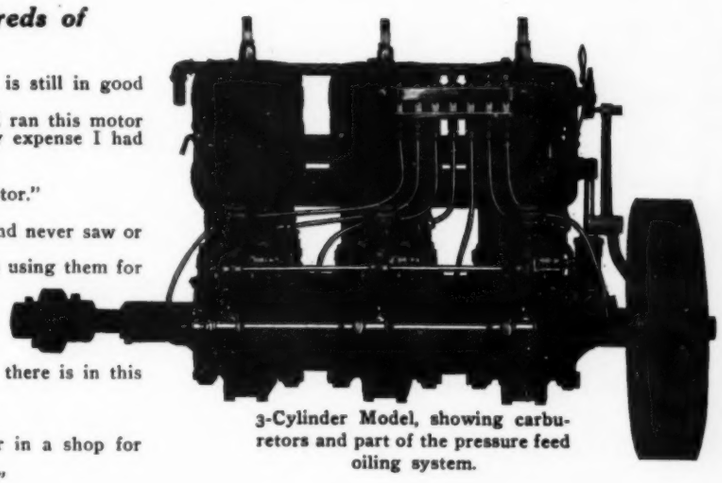
For Everything from a Canoe to a Cruiser

Have helped in establishing the reputation of many a boat builder. We know because we have made motors for them for the last 20 years. Satisfy yourself that the **TUTTLE** is the motor you want to sell to your customers. Others have done so, why not you?

Write for our catalogue. Read it. Ask us questions. Order a **TUTTLE** sent on. Test it out *thoroughly*. We give an unlimited guarantee. You take no chance.

Picked at random from hundreds of letters in our files

"One of the first motors that you made and it is still in good running condition."
"I bought a 3-cylinder 6-H.P. in May, 1908, and ran this motor every day for ten months each year, and the only expense I had on wear was 50c for a new commutator brush."
"This is my second one in the last 10 years."
"Never left to be towed home by any other motor."
"We won three straight races with her."
"I have owned and run 2, 3, 6, 10 and 12 H.P., and never saw or used one that did not give perfect satisfaction."
"Have bought three TUTTLE engines and been using them for the last seven seasons."
"I cannot see that she does not go as well as she ever did."
"My TUTTLE engine is the best engine at St. Albans Bay."
"I have as good if not the best running engine there is in this harbor."
"It always goes and keeps going."
"3500 miles a year without a mishap."
"I used this one four years and she was never in a shop for repairs."
"I have run a TUTTLE for the past nine years."



3-Cylinder Model, showing carburetors and part of the pressure feed oiling system.

Quality Considered, the TUTTLE is the Lowest Priced Motor Today

The **TUTTLE** is of the two-cycle, two-port type, and simple, efficient and durable. It is of medium speed, medium weight, and a particularly good all-around motor suitable for the great fleet of pleasure and ordinary working boats.

In selecting equipment, such as electrical outfit, propeller and all other fittings supplied, quality has governed throughout, so that a **TUTTLE** owner may have that satisfied feeling of confidence possible only from a knowledge of having the best.

UNLIMITED GUARANTEE--We guarantee the **TUTTLE** engine to be right, as far as it is humanly possible to have it, before leaving our shop. If it does not prove to be so, we stand ready to make good any defect not caused by carelessness or abuse.

TUTTLES range from 2 to 30 H. P. From 70 to 600 pounds

LET US KNOW SIZE OF MOTOR AND EQUIPMENT DESIRED
AND WE WILL SUBMIT A VERY ATTRACTIVE PRICE

Write for Catalogue **Choice Territory Open for Agents**

TUTTLE MOTOR COMPANY

614 Holden Street **CANASTOTA, N. Y., U. S. A.**

The Broadway of Automobile Advertising

A Broadway Dealer Said:—

"I find myself reading the advertising in MOTOR as carefully as the editorial pages. It keeps me in touch with the newest and best in every branch of the industry. From a business standpoint it is a valuable guide and for reference use it is really a catalog of all the standard products on the market. MOTOR's standing seems to add an idea of quality to all the articles advertised in it."

If you want to rank your product with all that is worth while on the automobile market, advertise it in MOTOR. The leading firms have found it profitable to be represented in this magazine month after month for five to eight years. Successful manufacturers spend their money where they know it will do them the most good.

Annual New York Show Number

January Issue, Final Advertising Form Closes Dec. 16th

The January issue of MOTOR will illustrate and describe every motor car, truck, accessory or part exhibited at the New York Auto Shows. As a record of the shows it will be invaluable to readers. They will save it for reference through the year.

Every issue of MOTOR is a profitable advertising investment. The January issue is the best of all the year. Use your largest space in this issue.

Send your reservation to-day

J. S. Hildreth
Advertising Manager

MOTOR

381 Fourth Avenue
New York City

Triplex

Finishes the Work the Carburetor Leaves Half Done

Economizes Fuel

Triplex

Increases Mileage

Triplex

Promotes Flexibility

Triplex

Prevents Back Firing

Triplex

Is Guaranteed to Decrease Fuel Consumption 25%

A Dirty Motor is a Short Lived Motor

Nothing tends to lower the efficiency, flexibility and sweet running qualities of a motor quicker than an improper mixture. Faulty carburetion is the prime cause of carbonization. Carbon clogged cylinders, sooty spark plugs, sap the ambition out of a motor, shorten its service.

Loss of COMPRESSION is caused from Dirt taken into cylinders through CARBURETOR. **THE TRIPLEX MAKES IT AN IMPOSSIBILITY** for DIRT to get into the cylinders. DIRT or DUST acts as a grinding material and causes loss of compression by grinding down PISTON, RINGS AND PITTING OF VALVES.

The Triplex Makes Imperfect Carburetion a Mechanical Impossibility

THE TRIPLEX is a device placed between the **MANIFOLD AND CARBURETOR TO BREAK UP THE MIXTURE**—the fuel.

The **TRIPLEX** will **EQUALIZE** the most **UNEVEN** mixture that leaves the carburetor—make it uniform throughout.

Operating as it does on a tried and proven scientific principle, the TRIPLEX insures a mixture which will burn CLEAN to the last atom. It is a physical impossibility for a bit of live gas to remain unignited. BLACK SMOKE is emphatically done away with—CARBONIZATION forestalled.

A TRIPLEX Will Pay For Itself in Two Months

By utilizing every drop of gasoline to its full capacity, the TRIPLEX makes a saving of over 25% per gallon. It gives you FIVE gallons of gasoline at the cost of FOUR. It makes high-proof gasoline out of low.

Furthermore, it increases power proportionately. The full cylinder charge is ignited every time—the maximum power delivered at the point of highest efficiency. Because there is no fuel waste, there is no power waste. A TRIPLEX is double economy—it INCREASES power at the same time it DECREASES fuel consumption.

Insure Yourself Against Back Firing With a TRIPLEX

Another advantage it possesses is that it prevents FIRING a motor boat or launch due to the fact that any FLAME is cut off in trying to go through the TRIPLEX. The principle is the same as the non-explosive feature of a miner's gauze lamp.

Further advantages are that a TRIPLEX makes starting easier regardless of temperature or atmospheric conditions, and stops suction of live gasoline when the motor is cold.

The TRIPLEX can be readily attached by anyone in one-half hour's time.

The TRIPLEX Is Guaranteed

THE TRIPLEX is guaranteed to do all that we claim for it, or your money back. Therein lies YOUR protection. For further information, write us.

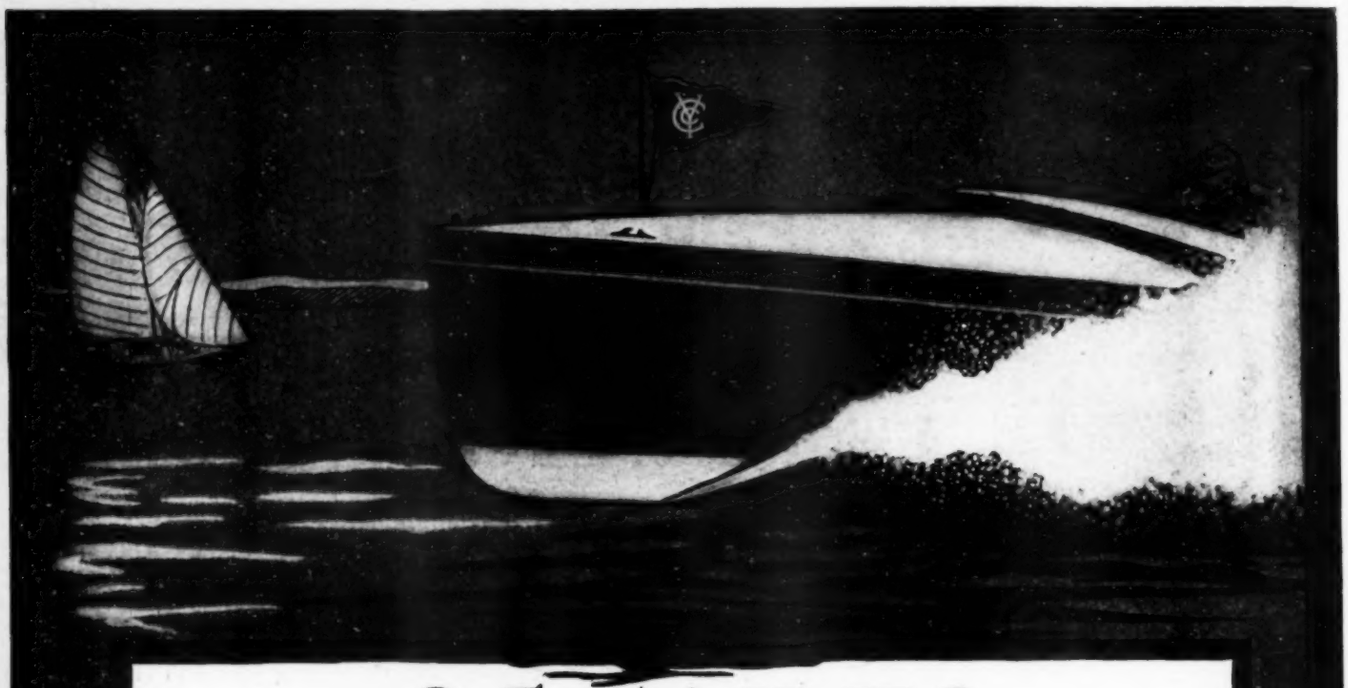
1 inch	$3.50	1¾ inch	$5.00
1¼ inch	4.00	2 inch	5.50
1½ inch	4.50	2½ inch	6.00

To Be Had at All Dealers or Direct on Receipt of Price

DEALERS: Here is one of the fastest selling little devices on the market. Every motorboat or launch owner has got to have one. Big sales spell big profits. Get our sales proposition TO-DAY.

Write or wire us

Bremer - Wilson Manufacturing Co.
1256 Michigan Blvd. CHICAGO, ILL.



35 MILES GUARANTEED

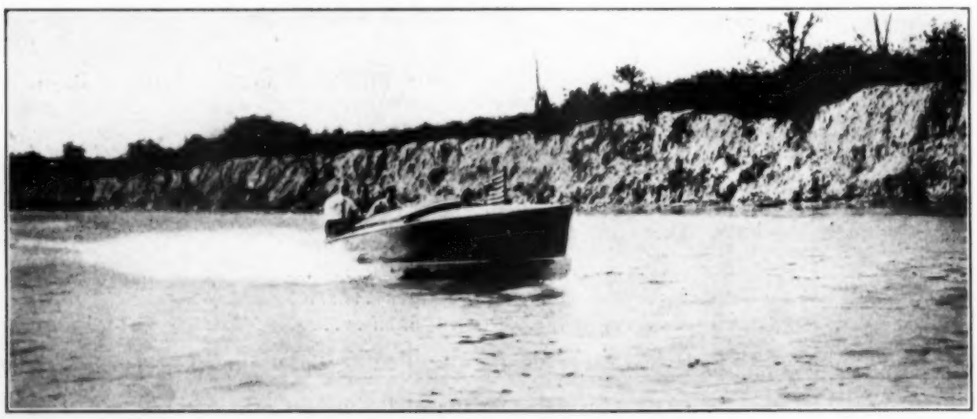
WECKLER-FAUBER HYDROPLANES

The 26-ft. Weckler-Fauber Hydros of which we are already building several upon order represent the highest development of the type in this size yet attained. Safe, fast, roomy, comfortable, dry, beautiful.

Seating capacity for five persons. Superbly finished throughout in mahogany. Six-cylinder, four-cycle, 100-H.P. Van Blerck air-starting motor. Design is technically correct; diving is impossible.

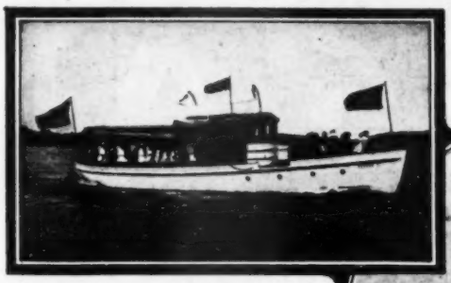
Price, $4200 complete, F.O.B. Chicago

A Comfortable Runabout **A Peerless Racer**



Write for specifications and information on this and larger Weckler-Fauber Hydroplanes.

WECKLER BOAT COMPANY, 2719 Irving Park Boulevard, Chicago



"Norman II," 53 ft. Passenger Boat, 32 H.P. Standard
A. P. Greenleaf, Owner

"Messenger," 38 ft. Supply Boat, 24 H.P. Standard
F. L. Johanns & Co., Owners

"Limit," Oyster Dredge, 32 H.P. Standard
H. L. Brush, Owner

THE POWER OF A NAME

People Trust an Honored Name More Than They Do Their Own Judgment

And by so doing all chance of a mistake is eliminated. Instead of the judgment of one mind a composite of the world's minds is had.

An honored name means years of accumulated confidence—the survival of the fittest. Only *exceptional quality* can ever attain it, only untiring vigilance can hold it.

It is only natural, then, that people place their trust in

THE STANDARD ENGINE

With marine engines, even in the eyes of the experienced, two of similar size may vary to the extreme in market value.

Lloyd's Register shows the STANDARD to be by far the most favored marine engine. The keenest, closest, best-informed buyers in the world are giving repeat orders for STANDARD engines.

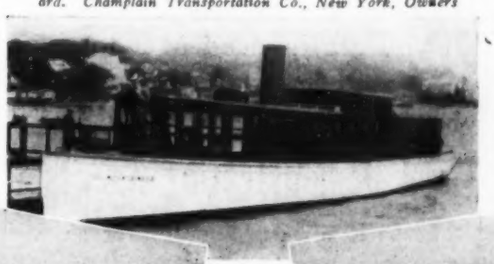
An important part of our engineering work is giving you the right installation and right propeller. Send data on your boat now so that we can advise you promptly.

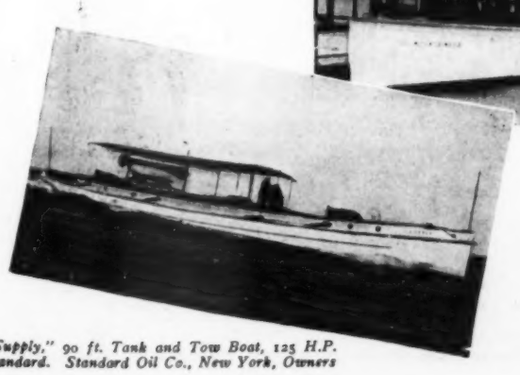
Write for catalogue. Back of the STANDARD guarantee is the

STANDARD MOTOR CONSTRUCTION COMPANY

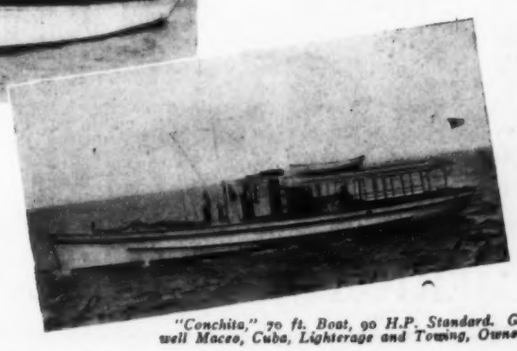
178 WHITON ST., JERSEY CITY, N. J.

"Mountaineer," 70 ft. Passenger Boat, 125 H.P. Standard. Champlain Transportation Co., New York, Owners





"Supply," 90 ft. Tank and Tow Boat, 125 H.P. Standard. Standard Oil Co., New York, Owners



"Conchita," 70 ft. Boat, 90 H.P. Standard. Godwell Macco, Cuba, Lighterage and Towing, Owner.

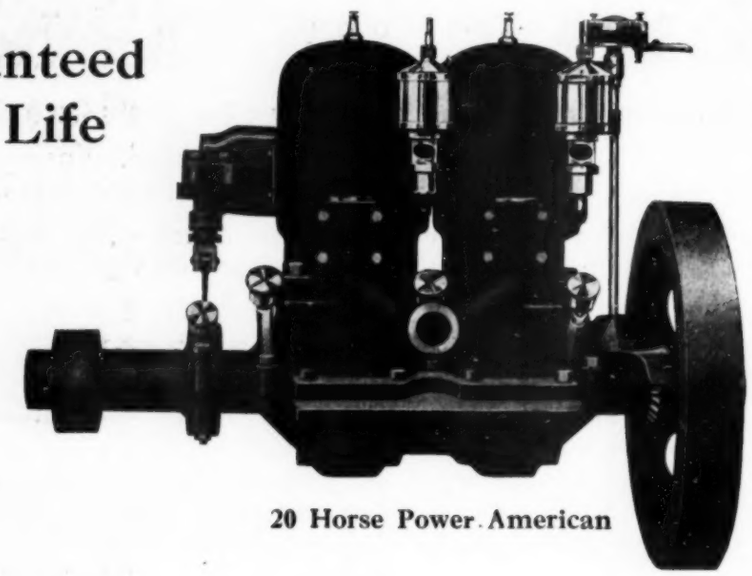
AMERICAN DETROIT

The Motor That Always "Makes Good"

This is a motor without a fault--the motor that always makes good. The AMERICAN is the most carefully constructed marine motor of the highest quality and greatest durability. AMERICAN motors are designed right, built right and are right--the result of fifteen years of conservative manufacturing experience.

Guaranteed For Life

30 Days Free Trial



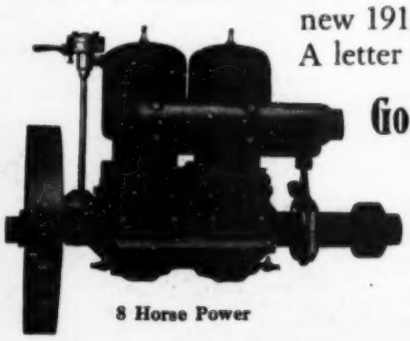
20 Horse Power American

All Sizes from 2 H.P. to 30 H.P.

Lowest Possible Prices

AMERICAN motors start without cranking—consume the least fuel and give the most power, and are absolutely reliable. So simple and positive in operation that the most inexperienced can run them as well as the expert. Nothing to get out of order—no gears—no cams—no springs—NO TROUBLE. Thousands in use and all giving perfect satisfaction and service.

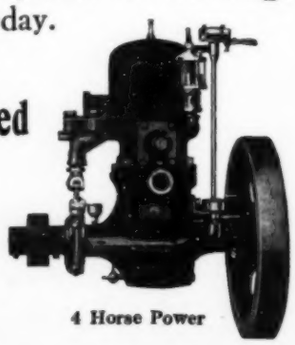
Every boat owner should have an AMERICAN motor in his boat and enjoy the full pleasure of motor boating, with all the trouble left out—NO "engine troubles" with the AMERICAN. If you are in need of a marine motor, send for our large new 1913 CATALOG. Do it right now—today. A letter or a post-card will bring it—FREE.



8 Horse Power

Good Demonstrating Agents Wanted

Write for our liberal offer to Agents, and secure exclusive rights in your locality NOW. AMERICAN motors are very easy to sell, because of their wonderful simplicity, superior quality, reliability and LOW PRICE.

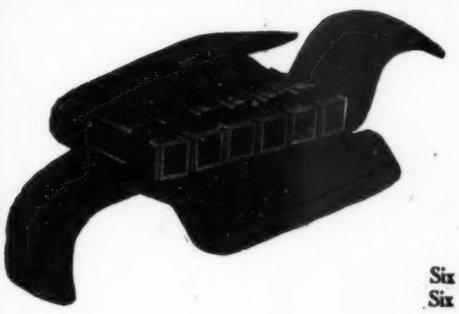


4 Horse Power

AMERICAN ENGINE CO., 415 Boston St., Detroit, Mich.

SPECIAL HOLIDAY OFFER

Mosler Spit Fire Plugs



This Handsome Leather
SPARK PLUG CASE
Given Free to Every Purchaser of Six of our
GENUINE PLATINUM POINTED PLUGS

Six ½ in. or Metric Spit-Fire Platinum Pointed Plugs, $7.50
Six ⅞-18 A.L.A.M. Spit-Fire Platinum Pointed Plugs, $9.00

This special offer is limited to the holiday and show season. If you want one of these fine cases (cost at least **$1.50** retail), send your order today.

Mosler Spit-Fire Platinum Pointed Plugs are the finest plugs made.
They increase the power of the engine over 10% by actual test.
Give the hottest spark, even when batteries are low.

If You Want Trouble Proof Ignition Use Nothing But Genuine Mosler Spit-Fire Platinum Pointed Plugs

Our patented base construction protects the porcelain and sparking points; it acts as a condenser of electricity and forms a compression chamber in which the gas ignites first, then shoots a heavy flame out into the cylinder, firing the charge with the greatest speed and power.

TRIUMPH SPARK PLUGS

For those who desire a high-grade open-end plug or who prefer a cheaper plug than the famous Spit-Fire, the Triumph Plug, at 50 cents is just the thing. Same materials and workmanship as our highest priced plugs; highest grade of porcelain; stuffing box construction which is easiest to take apart and put together and absolutely gas tight—the most perfect joint known in engineering practice. **$.50 Each**

The Spark Plug Case shown above is given free only with purchases of eighteen Triumph Plugs

Don't Delay—Send Your Order at Once

MOTOR BOATING

A. R. MOSLER & CO., P.O. BOX "M" MT. VERNON, N.Y.

WE OWN THE LARGEST FACTORY IN THE WORLD
DEVOTED EXCLUSIVELY TO THE MANUFACTURE OF SPARK PLUGS

CUT OFF AND MAIL TODAY

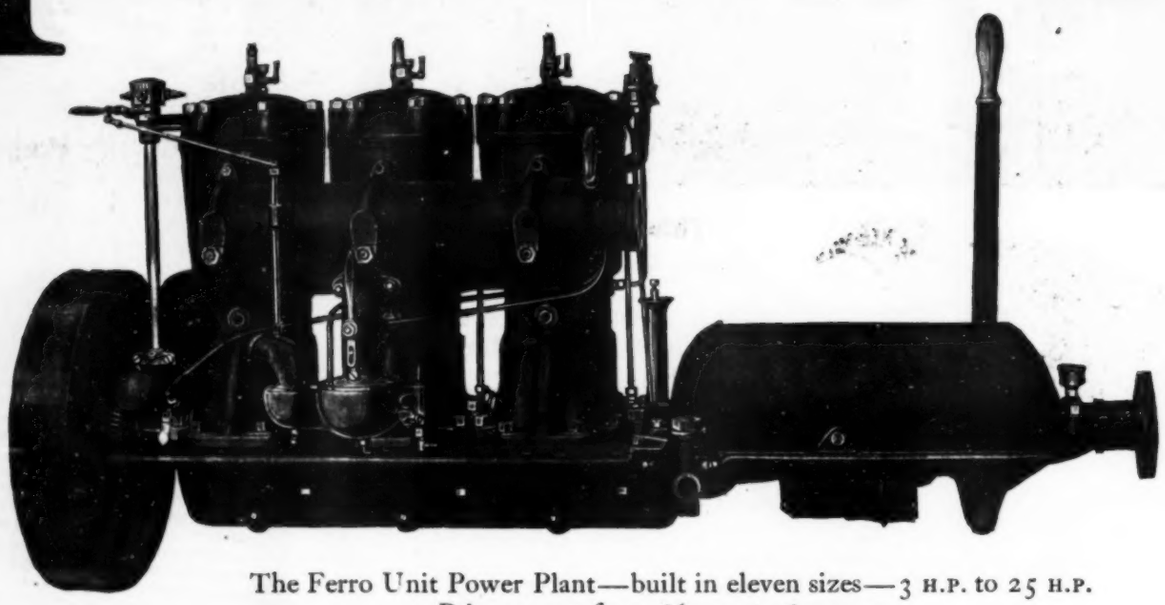
A. R. MOSLER & CO., Mt. Vernon, N. Y.

I enclose remittance for $..... Send me the free Leather Spark Plug Case with
Six ½" Metric Spit-Fire Platinum Pointed Plugs $7.50
Six ⅞-18 A.L.A.M. Spit-Fire Platinum Pointed Plugs, $9.00
Eighteen Triumph Plugs, $9.00
(Check which you want)

Name .....
Address .....
City .....
State .....

The World's Standard

FERRO



The Ferro Unit Power Plant—built in eleven sizes—3 H.P. to 25 H.P.
Prices range from $60.00 to $500.00.

The Best-built Motor in America

Users say So—Sales Prove It!

GUARANTEED to develop more actual horsepower at its rated revolutions than any other engine of similar size, bore and stroke operated under identically similar conditions.

This guarantee is backed by a company of established reputation both as to the quality of its product and its financial responsibility, owning and operating the largest, most complete and best equipped engine plant in the world.

1500 Sales representatives scattered in every country and in almost every port in the world emphasize what FERRO SERVICE means to the 40,000 owners and operators of Ferro Engines.

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When writing to advertisers please mention MOTOR BOATING, *the National Magazine of Motor Boating.*

Four "Hand V-Bottoms" Equipped with Loew Victor Model 5--30 H. P. Motors

"NEUTOI"

PROVIDENCE, R. I., Sept. 28, 1912.

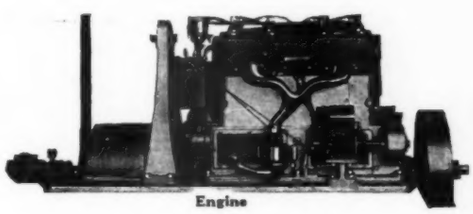
MR. W. H. HAND,
New Bedford, Mass.

DEAR MR. HAND:

I have yours of the 27th inst. at hand asking how I liked my "Piute III" Model with the Loew Victor Special Motor, and in reply would say, I am entirely satisfied with the outfit and have used it almost daily during the summer. The motor has never failed me and although not a speed boat, I have entered her in eight races and won first prize in each event. I do not claim her to be the fastest boat entered, as she makes but twenty miles an hour, but she always finishes and that helps some. I have ground the valves once and replaced two spark plug porcelains, which is all the attention and expense the motor has had since May 1st, and it is running as smooth as ever.

Having enjoyed the feeling of security which you have with a reliable motor, it is only a pleasure to recommend it to others.

Sincerely yours,
(Signed) H. F. HAMMOND.



Engine

"PIUTE III"

NEW BEDFORD, MASS., Oct. 11, 1912.

THE LOEW MANUFACTURING COMPANY,
Cleveland, Ohio.

GENTLEMEN:

It gives me great pleasure to report the satisfaction which I have obtained during the past season with my boat "Piute III" equipped with a 30 H. P. Special Loew Victor Motor. Although I have owned a great many different machines, never have I possessed one which gave such great satisfaction, performed so perfectly under all conditions or showed as great efficiency.

I have used "Piute III" for sword fishing trips, which frequently carried me from 40 to 50 miles out to sea, and have run the engine for 12 and 14 hours a day without stopping.

I congratulate you upon the production of such an excellent motor, and remain, with best wishes,

Yours very truly,
WM. H. HAND, JR.

"MERCURY"

MR. WM. H. HAND, JR., BALTIMORE, MD., Sept. 25, 1912.
New Bedford, Mass.

DEAR SIR:

In reply to yours of the 23rd, will say that the 24' x 5' 6" "V" bottom launch I recently had constructed from your plans has proven to be an ideal pleasure craft. Its buoyancy in a heavy sea and speed with moderate power is remarkable; when turning at high speed she shows very little list, a thing that cannot be said of the ordinary round bottom boat, which in executing that maneuver often results in disaster. The boating fraternity around Baltimore are all enthusiastic admirers of this boat. Quite a few were fooled in regard to the speed she would make. Some of the wise ones predicted she would not make over 16 miles, but she can easily reel off 21 miles.

The motor has proven itself absolutely reliable and very powerful. In the three weeks it has been in commission I have driven it over 300 miles and it has not missed an explosion.

Yours very truly,
(Signed) R. B. HALL.

Loew Victor Motor Model 5--30 H. P.

Designed for Runabouts

The Loew Manufacturing Co.
1907 Madison Ave., Cleveland, O.

"OLD GLORY II"

NEW YORK, Sept. 5, 1912.

LOEW MANUFACTURING COMPANY,
Cleveland, Ohio.

GENTLEMEN:

Have just returned from a trip from New York to Digby, N. S., in the 24-foot "V-bottom" runabout I built from Mr. Hand's design and equipped with your Model 5 "en bloc" engine. The trip was most successful in every respect, and demonstrated the seagoing qualities of the "V" type and the absolute reliability of your engine.

The boat started on this trip one hour after launching, and during the entire trip we did not have occasion to use a tool of any kind on the engine. We operated it several times for 18 or 20 hours at 900 r.p.m. without a stop. It is the best engine I have ever seen, and I congratulate you upon the excellence of your product.

Yours very truly,
(Signed) GEORGE P. P. BONNELL.

TWO 54 hp "Buffalo" Heavy Duty engines power the 120 ft. car ferry *Henderson*, designed by Morris M. Whitaker, Nyack, N. Y. and owned by the Evansville Railways Co., Evansville, Ind.

These engines were chosen in competition with all other sources of power including steam engines for two reasons—RELIABILITY AND ECONOMY

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"Buffalo" marine engines are built in 20 sizes—3 to 125 hp—for boats of all kinds.
They operate on gasolene or kerosene.
Send in this coupon and get the "Buffalo Book."

Date_____

Buffalo Gasolene Motor Co.:
Send me information concerning the best power plant for a boat of the type before which I have marked "X" and of the size here stated:

	Auto Boat		Racing Boat
	Auxiliary		Runabout
	Cruiser		Str. Paddle Wheel
	Fish Tug		Tug Boat
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Length_____ Beam_____
Draft_____ Speed desired_____

Name_____

Address_____

BUFFALO GASOLENE MOTOR CO.,
1274 - 1286 Niagara St., Buffalo, N. Y.

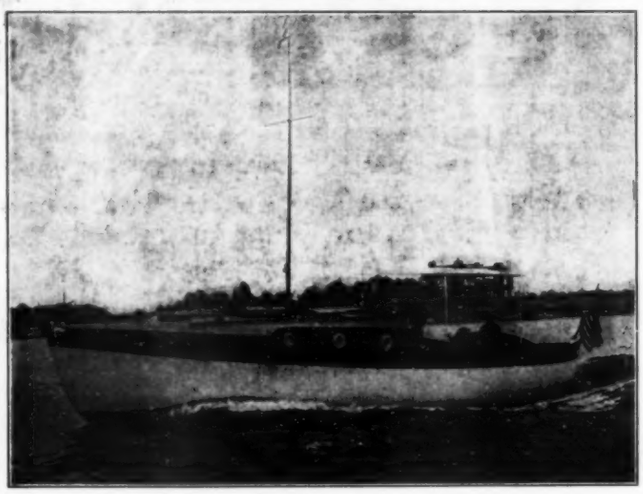
"My Most Satisfactory Season Afloat"

A Characteristic Expression From the User of a

Marine Engine

NEW ROCHELLE YACHT CLUB
Harrison Island, Echo Bay
New Rochelle, N. Y.

Lamb Engine Co., New York. *September 30, 1912.*
Gentlemen:
Having finished my most satisfactory season afloat, I cannot go into winter quarters without conveying to you my thanks for the large part of the pleasure which the Lamb Motor you installed in my power boat "Hopalong," last July, contributed.
The motor was tested under all possible conditions of weather and sea — four days of slowest possible speed in the Champlain canal, being one of the tests — and it never so much as coughed back.
To my friends and acquaintances I say, if you want the real thing in Marine Motors, go to the Lamb.
In future afloat, I shall be like Little Mary ashore, "and everywhere that Billy went the Lamb was sure to be."
Truly yours,
WM. KING, JR.



"HOPALONG"—MR. WM. KING, Jr., OWNER
37' O. A. 9' Beam. 3' Draft, 18 H. P. Lamb Motor, Speed 10 Miles

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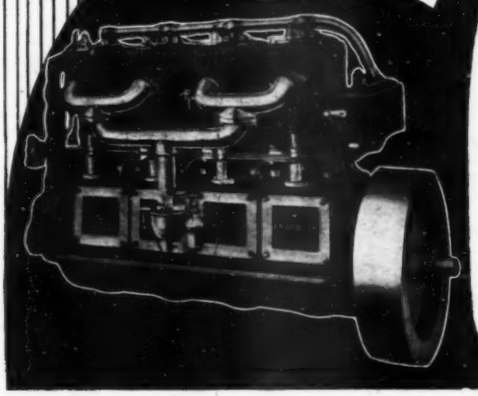
Anderson ENGINES



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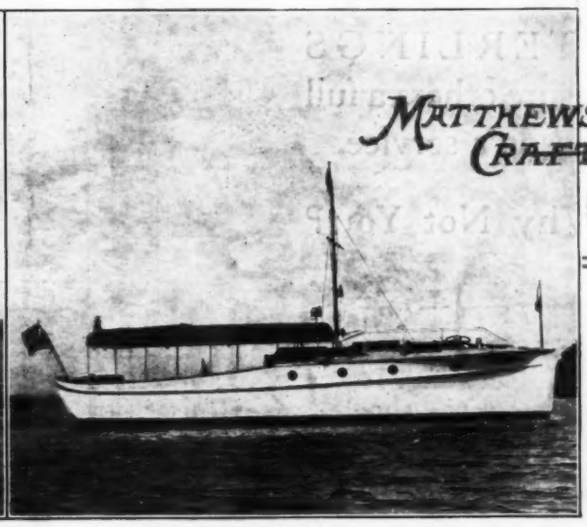

36' x 9' 6" Cruiser "Rousalka," owned by H. H. McNamee, of Wabash, Ind.

FURTHER EVIDENCE—Matthews' Satisfaction

Wabash, Ind.

The Matthews Boat Company,
Port Clinton, Ohio.

GENTLEMEN:

After a season's use of the ROUSALKA, the little thirty-six foot cruiser you built for me last Winter, I am very glad to report to you that she has proven satisfactory in every way.

She was in use early this Spring on Lake Erie. I then ran her to Northport, Michigan, by way of Lake Huron and the Straits. Since that time she has been in use on Grand Traverse Bay and vicinity. Since last Spring there have been ample opportunities to test the boat thoroughly under all weather conditions.

She has seen some pretty rough service and has demonstrated that she is an easy-working, comfortable and seaworthy model.

I want to further advise you that the operation of the 20-H.P. Ralaco Motor, with which she is equipped, has been most commendable. The engine has given efficient service at all times with very little attention.

I shall always be glad to recommend your company to prospective boat purchasers.

Yours very truly,

(*Signed*) H. H. McNAMEE.

The Matthews Boat Company CRUISING YACHTS OF QUALITY **Port Clinton, Ohio**

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THE ENGINE of REFINEMENT

For the finest boats that float

INSURE AGAINST TROUBLE

THE purchase price of a STERLING Engine is your policy against unlooked for delays and additional expense. Start the season right. Save time, money and annoyance by installing a marine motor that practically looks after itself. STERLINGS are scientifically designed to give the best service for all conditions. They have never failed to make good under the hardest tests and are easy and economical to operate.

STERLINGS insure others a full season's service.

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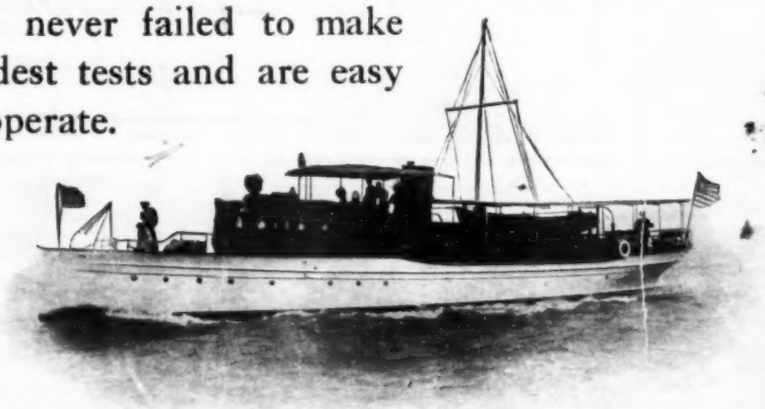

"WETHEA"

"WETHEA" Is Owned by Howard W. Baker of Minneapolis. She is 82 feet long, 14 feet wide and is a tunnel stern, shoal draft Cruiser for Southern use. She is one of the handsomest and most complete Motor Yachts in the country. Mr. Baker selected a pair of Six Cylinder 60 H. P. heavy duty Sterlings to drive her. Speed 14 miles per hour.

Four Cycle Engines from 8 to 240 H. P.

FOR Work Boats, STERLINGS make ideal power. Their sturdy construction, simple design and economy win instant favor.

ALL the remarkable speeders of the year are STERLING powered. Look them over—Baby Reliance II, Baby Reliance III, Ankle Deep, Tech Junior, Neptune III, P. D. Q. II and a score of others.

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